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# American Foundryman

A PUBLICATION OF THE AMERICAN FOUNDRYMEN'S ASSOCIATION THE CHIEF OFFICERS' ACTIVITIES

June  
1939

## A. F. A. Looks Forward



*The* position this country has attained as the leading industrial nation of the world has not been brought about by chance. It is the result of forward planning by men having an everlasting faith in our destiny.

The men who have directed the policies of A.F.A. for the past forty odd years have had that faith. In good times and bad the Association has never deviated from its purpose of advancing all divisions of the Foundry Industry. Through research and discussion; through a tremendous amount of individual effort on the part of those presenting papers, it is continuously placing in our hands basic information that we use in our practice of today and in our planning for tomorrow.

A.F.A. is not hindered in its work by internal political dissension or discussion. The time allotted to our annual conventions, to our regional conferences and to our chapter meetings is devoted entirely to technical discussions of practical foundry problems.

It was stated at the Cincinnati Convention that during the past year some 24,000 foundrymen attended these various meetings. Common sense tells us that here is the reason why the casting of metals—ferrous—non-ferrous—malleable—steel—continues to hold its place in the sun.

At appropriate times an exhibit of foundry equipment and supplies is held as part of our annual convention. Those of us who have attended these exhibits over a period of years and have followed the continuous procession of new developments realize the vitally important part they have played in our advancement and the role this part of our membership has played in furthering the aims of our Association.

Regardless of generally unsettled conditions; regardless of present accomplishments, we believe the future holds promise of still greater attainments and I say again—

A.F.A. LOOKS FORWARD

*H. S. Washburn*

H. S. Washburn  
President, American Foundrymen's Association

*Mr. Washburn is president, Plainville Casting Co., Plainville, Conn., and was elected president of the American Foundrymen's Association at the Annual Business Meeting at the recent Cincinnati Convention, May 17, 1939. Prior to his election to the presidency, Mr. Washburn served as a director and vice president of the Association.*

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Room 1198, 222 West Adams St., Chicago, Ill.

# American Foundryman



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## *1939 Convention Attracts Largest Non-Exhibit Year Attendance*

**A**TTRACTING nearly 1,400 members and guests, the 43rd Annual Convention of the American Foundryman's Association, held in Cincinnati, Ohio, at the Hotel Gibson, May 15 to 18 inclusive, was the best attended and most successful convention without an exhibit that the Association has ever held. Each of the 34 sessions was exceptionally well attended with demonstrated interest in papers presented as indicated by the general tenor of the discussions. In addition to the regularly scheduled sessions, many committee meetings were held. Two new features were added to the program this year. The first was a lecture course of three sessions on "The Microscope in Elementary Cast Iron Metallurgy" by Roy M. Allen, consulting metallurgist, Bloomfield, N. J.; the second was the Non-Ferrous Division Dinner. These two added attractions together with the committee meetings, the shop operation course, the apprentice contest and display, plant visitations, demonstrations, the annual business meeting and Board of Awards lecture, and the annual dinner kept those in attendance busy every moment and contributed to the general success of the convention.

### **Program Divisions**

As in former years, an attempt was made to schedule sessions simultaneously which did not conflict in interest. Because of the extensive program adopted by the Gray Iron Division, sessions

on gray iron subjects were held throughout the week. Activities for gray iron foundrymen included a series of four shop operation courses on cupola practice, gates and risers, and cupola refractories and figuring mixes; the three session lecture course on "The Microscope in Elementary Cast Iron Metallurgy"; a division luncheon and three sessions on developments in gray iron.

### **Resumé of Sessions**

Sessions of interest to malleable and non-ferrous foundrymen were held the fore part of the week on Monday and Tuesday. The malleable program consisted of two sessions on technical problems and the annual malleable round table conference. The non-ferrous program was more extensive, consisting of three sessions on technical subjects, the annual round table conference and the first dinner of the Non-Ferrous Division. The latter feature, held for the first time this year, was a decided success.

Sessions of interest to steel foundrymen were held the last two days of the convention, Wednesday and Thursday. The steel program consisted of three technical sessions, one of which was a symposium on steel melting practices. The fourth session was the annual steel round table luncheon.

Sessions of general interest and particularly designed to discuss management problems were held throughout the week. General interest sessions

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included those on the castability of metals, refractories, two sessions on sand research, patternmaking, the annual business meeting and the annual dinner. Such management problems as materials handling, apprentice and foreman training, safety and hygiene, job analysis and foundry costs also were held throughout the week.

#### Opening Session

The convention began auspiciously with the well attended opening session at which Marshall Post, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., President of A.F.A. presided. President Post introduced George Seyler, Lunkenheimer Co., Cincinnati, general chairman of the Cincinnati Convention Committee, which did such a splendid job in assisting in staging the convention, who welcomed visiting foundrymen. Mr. Seyler then introduced Mayor James G. Stewart



The Ladies Had a Good Time Too.

of Cincinnati, who said that he hoped that the convention would be a factor in restoring business stability and prosperity.

#### Non-Ferrous

The first non-ferrous session began following the opening meeting on Monday. This session, at which W. M. Ball, Jr., Edna Brass Mfg. Co., Cincinnati, and C. O. Thieme, H. Kramer & Co., Chicago, acted as co-chairmen, featured a discussion of the production of bronze pressure castings by D. Frank O'Connor, Walworth Co., Boston, and one on crucible melting by G. K. Eggleston, Detroit Lubricator Co., Detroit. The session on Monday evening, where Harold J. Roast, Canadian Bronze Co., Ltd., Montreal, Canada, and W. J. Laird, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., acted as co-chairmen, was devoted to a discussion of the effects of aluminum and antimony on the physical properties of red cast brass by H. B. Gardner and C. M. Saeger, Jr., both of the Bureau of Standards, Washington, D. C., and to the production of high conductivity copper castings, by A. B. Kinzel, Union Carbon and Carbide Research Laboratories, New York. The for-



The St. Louis Gang Plus a Cincinnati.

mer paper was presented by Mr. Gardner and the latter by C. O. Burgess, an associate of Dr. Kinzel.

The third session was held on Thursday with H. M. St. John, Crane Co., Chicago, and W. Romanoff, H. Kramer & Co., Chicago, as co-chairmen. Two papers were presented, the first entitled "The Foundry and Metallurgical Science," by M. G. Corson, New York, and "Influence of Pouring Ladles on Quality of Red Brass," by R. W. Parsons, Ohio Brass Co., Mansfield, Ohio. At noon the same day, the annual Non-Ferrous Round Table Luncheon was held with J. W. Kelin, Federated Metals Division, American Smelting & Refining Co., St. Louis, presiding.

Tuesday evening was a red letter day in the history of the Non-Ferrous Division of A.F.A. At that time the first Non-Ferrous Division Dinner was held and it turned out to be the high point in the non-ferrous activities at the convention. Originally scheduled with some trepidation and estimated conservatively so far as attendance, the dinner was a huge success with much larger attendance of members and guests and their wives than had been anticipated. Arrangements for the dinner were carried out under the direction of Harold J. Roast, chairman of the Non-Ferrous division. Mr. Roast and his committee deserve unstinted praise for making this dinner the outstanding success that it was.

#### Malleable

The first session on malleable iron was held Monday morning with J. H. Lansing, Malleable Founders' Society, Cleveland, presiding. The first paper by J. O. Klein, Texas Foundries, Inc., Lufkin, Tex., was on the properties of white iron for malleablization while the second, entitled "The Shearing of Malleable Iron Gates" by S. D. Martin, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich., brought forth much favor-

#### Many Private Conferences Were Held.





John Dow



G. M. Guiler

able discussion for the methods outlined.

The annual Malleable Round Table Luncheon was held Monday evening with L. N. Shannon, Stockham Pipe Fittings Co., Birmingham, Ala., and P. C. DeBruyne, Moline Malleable Iron Co., St. Charles, Ill., presiding as co-chairmen. This session was devoted to an informal discussion of current shop practices. The Tuesday morning session was presided over by C. F. Joseph, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich., and R. Schneidewind, University of Michigan, Ann Arbor, Mich., as co-chairmen. The first paper by John Dow, Holcroft & Co., Cleveland, Ohio, was on the subject of atmosphere control in the malleablizing operation while the second dealt with the influences of hydrogen in solid white cast iron by H. A. Schwartz and G. M. Guiler, National Malleable & Steel Castings Co., Cleveland. The latter was presented by Dr. Schwartz.

#### Steel

The first steel session was held Wednesday morning with J. W. Bolton, Lunkenheimer Co., Cincinnati, and W. C. Hartman, Bethlehem Steel Co., Bethlehem, Pa., presiding as co-chairmen. The manufacture of high alloy steel castings for heat and corrosion purposes was discussed by James Corfield, Michigan Steel Castings Co., Detroit, while a paper entitled "Copper as an Alloying Element in Some Cast Steels," was presented by C. T. Greenidge and C. H. Lorig, Battelle Memorial Institute, Columbus, Ohio. In addition, the steel division committee on impact tests reported through its chairman, L. C. Wilson, Reading Steel Casting Div., American Chain and Cable Co., Reading,

Pa. C. W. Briggs, Steel Founders' Society of America, Cleveland, presented the report of the committee on radiography and N. A. Kahn, New York Navy Yard, New York, outlined gamma-ray radiographic standards of the U. S. Navy for steel castings.

Three papers were presented at the steel session on Wednesday afternoon. These included the description of a method for rapid determination of carbon in plain carbon steels for control purposes by H. H. Blosjo, Minneapolis Electric Steel Foundry Co., Minneapolis, Minn.; a study of synthetically bonded steel molding sands by C. W. Briggs, Steel Founders' Society of America, Cleveland and R. E. Morey, Naval Research Laboratory, Anacostia, D. C.; and the



E. E. Woodliff



W. G. Finster

official exchange paper from the Association Technique de Fonderie de France. The latter a discussion of steel castings with high mechanical properties by George Delbart, Paris, was abstracted by C. E. Sims, Battelle Memorial Institute, Columbus, Ohio. The steel division committee on heat treatment presented an extensive report on the results of a survey on the heat treatment of steel castings. The report was presented by D. C. Zuege, Sivy Steel Casting Co., Milwaukee, who also acted as co-chairman of the session with J. H. Hall, consultant on steel castings, Philadelphia.

Thursday morning, steel foundrymen gathered to hear a comprehensive symposium on melting practices. Processes covered included the converter, induction furnace, acid and basic open-hearth and basic and acid electric. The melting practices for the various named units were covered by F. B. Skeats, Link-

Belt Co., Chicago; G. F. Landgraf, Lebanon Steel Foundry, Lebanon, Pa.; W. C. Harris, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.; J. W. Porter, American Steel Foundries, East Chicago, Ind.; C. W. Briggs, Steel Founders' Society of America, Cleveland; and Werner G. Finster, Reading Steel Castings Div., American Chain and Cable Co., Reading, Pa., respectively.

That noon, the annual steel round table luncheon was held. A. H. Jameson, Malleable Iron Fittings Co., Branford, Conn., and T. N. Armstrong, International Nickel Co., Inc., New York, acted as co-chairmen. Discussion centered around the use of deoxidizers and the reduction of silicon from the slag. C. E. Sims, Battelle Memorial Institute, Cleveland, Ohio, and D. C. Zuege, Sivy Steel Casting Co., Milwaukee, lead the discussion on these respective subjects.

#### Gray Iron

As already stated, gray iron shop course sessions were held each day of the convention and the lecture course by Mr. Allen also has received comment as has the gray iron division luncheon at which no particular subject was discussed. The first technical session for gray iron foundrymen was held Monday evening with F. J. Walls, International Nickel Co., Inc., Detroit, and W. R. Jennings, John Deere Tractor Works, Waterloo, Ia., presiding as co-chairmen. Harry Swan, Cadillac Motor Car Co., Detroit, presented a paper by L. S. Danse of the same company in his absence on the study of the cracked-castings problem. E. L. Roth, Motor Castings Co., Milwaukee, Wis., then described the manufacture of 60,000 lb. per sq. in. tensile strength cast iron by the cupola process. The offi-



W. C. Harris

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cial exchange paper of the Institute of British Foundrymen, entitled "Castings for the British Gas Industry," by F. Whitehouse, Chapeltown, England, was presented in absence of the author by Dr. J. E. Hurst, past president of the Institute of British Foundrymen, Darlestone, England.

#### Other Gray Iron Sessions

The second session over which Dr. J. T. MacKenzie, American Cast Iron Pipe Co., Birmingham, Ala., and W. A. Hambley, Allis-Chalmers Mfg. Co., Milwaukee, presided as co-chairmen, was devoted to a discussion of a rapid method for measuring the temperature of molten iron with an immersion thermocouple by F. Holtby, University of Minnesota, Minneapolis, Minn., while the advantages of the addition of a copper-aluminum-silicon alloy to cast iron were presented by V. H. Schnee and T. Barlow, Battelle Memorial Institute, Columbus, Ohio. The final paper at this session was presented by R. Schneidewind and C. D'Amico, University of Michigan, Ann Arbor, Mich., on the influence of undercooling on the graphite pattern of gray iron.

The final gray iron session was held Thursday morning, with A. L. Boegehold, General Motors Corp., Detroit, and L. H. Rudesill, Griffin Wheel Co., Chicago, as co-chairman. Three papers were presented whose titles and authors were as follows: "Influence of Composition on Electric Furnace Irons," by R. G. McElwee, Vanadium Corp. of America, Detroit, and R. Schneidewind, University of Michigan, Ann Arbor, Mich.; "Some Factors in Hardening and Tempering Gray Cast Iron," by G. A. Timmons, V. A. Crosby and A. J. Herzig, Climax Molybdenum Co., Detroit; and "Effects of Heat Treatment on Combined Carbon and Physical Properties of Cast Iron," by S. C. Massari, Association of Manufacturers of Chilled Car Wheels, Chicago.

The first session of interest to management was that held on Monday evening. The subject was materials handling and equipment. W. R. Jennings,

John Deere Tractor Works, Waterloo, Iowa, discussed the proper selection of molding equipment for the production of castings, giving cost and fatigue figures. The effectiveness of water under pressure as a castings cleaning medium was discussed in the second paper by R. Webster, Hydroblast Corp., Chicago. This session turned out to be one of the best sessions held on these subjects in recent years. E. W. Beach, Campbell, Wyant & Cannon Foundry Co., Muskegon, Mich., and James Thomson, Continental Roll & Steel Foundry Co., East Chicago, Ind., acted as co-chairmen.

Two sessions were held on apprentice and foreman training. The first session was held Tuesday morning with J. E. Goss, Brown & Sharpe Mfg. Co., Providence, R. I., presiding. Apprentice training as practiced in the



R. E. Morey

plant of the Cincinnati Milling Machine Company was presented by H. K. Ewig of that company while practices in vogue at the Caterpillar Tractor Co., Peoria, Ill., were discussed by M. J. Gregory, factory manager.

The second session on Wednesday morning discussed both apprentice and foreman training. Two papers were presented, the first by A. R. Luebke, Fairbanks, Morse & Co., Beloit, Wis., entitled "Foundry Apprentice Training—An Essential to Foreman Training," and the second by W. G. Connor, Jr., Walworth Co., Greensburg, Pa., entitled "A Foundryman's Approach to Foreman Training."

Other sessions of interest to management were those on safety and hygiene, foundry costs and job analysis. The former session was held Tuesday with L. C. Wilson, manager, Reading Steel Casting Div., American



E. Pragoff, Jr.



C. D'Amico

Chain & Cable Co., Reading, Pa., presiding. The establishment of a safety and hygiene program in a small foundry was discussed by P. E. Rentschler, Hamilton Foundry & Machine Co., Hamilton, Ohio. "The Open House and Public Relations" was the subject of an interesting talk by W. H. Doerfner, manager, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich. The timeliness of these subjects added materially to the interest of the meeting.

J. G. Stegemerten, time study and methods dept., Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., discussed "A Practical Approach to Job Analysis" at the session on this subject. H. C. Robson, Continental Roll & Foundry Co., East Chicago, Ill., presided.

Wednesday afternoon, R. L. Lee, Liberty Foundry Co., Wauwatosa, Wis., presided and lead the discussion on foundry molding and melting costs at the foundry cost session. This session was devoted to a discussion of the similarity of operations and cost systems as used in the various branches of the industry.

#### General Interest Sessions

Sessions of general interest were held throughout the week. Of particular interest were those on the castability of metals which covered steel, gray iron, aluminum alloys and malleable iron. Papers on these subjects were presented by C. H. Lorig and E. C. Kron, Battelle Memorial Institute, Columbus, Ohio; N. A. Ziegler and H. W. Northrup, Crane Co., Chicago; L. W. Eastwood and L. W. Kempf, Aluminum Co. of America, Cleveland; and E. J. Ash, University of Michigan, Ann Arbor, Mich., respectively. W. H. Spencer, Sealed Power Corp., Muskegon, Mich., and G. P. Hal-



Presented to James R. Allan

liwell, H. Kramer & Co., Chicago, presided as co-chairmen.

At the refractories session, cupola and steel foundry refractories were discussed by R. E. Wilke, John Deere Tractor Works, Waterloo, Iowa, and A. V. Leun, Bethlehem Steel Co., Bethlehem, Pa., respectively. E. J. Carmody, C. C. Kawin Co., Chicago, and A. H. Dierker, Ohio State University, Columbus, Ohio, presided as co-chairmen.

Two sessions were held on sand research, both of which were presided over by H. S. Washburn, Plainville Casting Co., Plainville, Conn., and W. G. Reichert, Singer Mfg. Co., Elizabeth, N. J. At the first session an excellent paper by Emile Pragoff, Jr., Hercules Powder Co., Wilmington, Del., describing the properties of resin bonded cores and another by H. W. Dietert, Harry W. Dietert Co., Detroit, on hot strength and collapsibility of foundry sands completed this session. The second session was devoted to a paper by R. E. Grim, Illinois Geological Survey, Urbana, Ill., which described the fundamentals and meaning of petrographic analysis. Mr. Grim also was co-author with C. E. Schubert, University of Illinois, of a paper describing the mineral composition and textures of the clay in molding sands. The report of the sand research committee was presented by Dr. H. Ries, Cornell University, Ithaca, N. Y.

The Annual Business Meeting of the Association was called to order Wednesday morning, by President Post, who expressed

his delight to see the large attendance. Following his remarks, President Post called for the report of Executive Vice President C. E. Hoyt who gave a resume of the Association's activities and accomplishments for the year. Following Mr. Hoyt's report, Past President James L. Wick, Jr., Falcon Bronze Co., Youngstown, Ohio, presented the report of the Nominating Committee, moved the report be accepted and the members elected. On second, the secretary cast the unanimous ballot for the nominee's election. (The election of officers and directors is given elsewhere in this issue.) The Prenominating Committee, which had been appointed by the president at the opening meeting, then was called to report. This committee consisted of L.



Presented to Harold S. Falk

E. Everett, The Key Co., East St. Louis, Ill., *chairman*; H. W. Dietert, Harry W. Dietert Co., Detroit, and C. E. Westover, Burnside Steel Foundry Co., Chicago. In presenting the report, Chairman Everett stated that this committee, after due consideration, nominated the following to serve with Past Presidents H. Bornstein, Deere & Co., Moline, Ill.; Marshall Post, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., and James L. Wick, Jr., Falcon Bronze Co., Youngstown, Ohio, as members of the nominating committee.

M. J. Gregory, Caterpillar Tractor Co., Peoria, Ill.

C. F. Joseph, Saginaw Malleable Iron Div., General Motors Corp., Saginaw, Mich.

J. W. Kelin, Federated Metals Div., American Smelting & Refining Co., St. Louis, Mo.

W. H. Parker, American Steel Foundries, East Chicago, Ind.

#### Alternates

B. D. Claffey, General Malleable Corp., Waukesha, Wis.

R. F. Harrington, Hunt-Spiller Mfg. Co., Boston, Mass.

J. H. Lansing, Malleable Founders' Society, Cleveland, Ohio.

Ed. Walcher, Ohio Steel Foundry Co., Lima, Ohio.

On motion and second from the floor, the slate as proposed was passed.

President Post then called for the report of the National Apprentice Contest judging which was given by Technical Secretary N. F. Hindle. The results of the contest are given elsewhere in this issue.

Chairman Post then introduced Director Bornstein who in turn introduced Fred H. Clausen, president, Van Brunt Mfg. Co., Horicon, Wis., who delivered the Annual Board of Awards Lecture. Mr. Clausen's subject was "Business Management Has a Job." In his talk, he outlined many of the present detriments to business which he thought were halting recovery and outlined several points that in his opinion must be rectified before general and lasting recovery and prosperity would be possible. (See pp. 13-18.)

The Annual Dinner of the Association was held in the Roof Garden, Hotel Gibson, with approximately 400 in attendance.



Presented to Donald J. Campbell

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Following the dinner, and after appropriate remarks by President Post, who presided as toastmaster, he called on Director H. Bornstein who presented the W. H. McFadden Gold Medal of A.F.A. to Donald James Campbell, Campbell Wyant & Cannon Foundry Co., Muskegon, Mich., in recognition of the developments of his company in casting manufacturing processes. Mr. Campbell was prevented from attending and in his absence, the award was accepted by George Cannon, one of Mr. Campbell's co-workers.

The second award, the John A. Penton Gold Medal, was presented to Harold Sands Falk, Falk Corp., Milwaukee, Wis., for his constant and conspicuous leadership in promoting general interest in apprentice training, and especially foundry training, by Past President T. S. Hammond, Whiting Corp., Harvey, Ill.

The third presentation, that of the J. H. Whiting Gold Medal, was made to James Ramsay Allan, International Harvester Co., Chicago, by Past President E. H. Ballard, General Electric Co., West Lynn, Mass., for his outstanding service to the Association over many years as a committee leader along engineering lines, developing standards for refractories and codes of recommended practices applying to dust suppression equipment.

Following the medal presentations, President Post called on J. E. Hurst, past president, Institute of British Foundrymen, who conveyed greetings from that organization, the British Cast Iron Research Association,

the Iron & Steel Institute and several other British organizations. Mr. Hurst then announced that the "E. J. Fox Gold Medal" of the Institute of British Foundrymen had been awarded to Dr. Harry A. Schwartz, manager of research, National Malleable and Steel Castings Company, Cleveland, O., in recognition of the very valuable work he has done in research developments in the field of malleable cast iron. The presentation will be made at the International Foundry Congress in London on June 13. The medal was established a few years ago by Mr. J. E. Fox, managing director, Stanton Iron Works Co., Ltd. and its establishment commemorated the development of centrifugal castings in Great Britain.

#### To the Cincinnati Committee

Following the presentation of the medals, those present enjoyed a fine program of entertainment and dancing arranged by the entertainment committee of the Cincinnati Convention Committee under the chairmanship of H. K. Ewig, Cincinnati Milling Machine Co., chairman of the Cincinnati District Chapter of A.F.A.

The success of any convention in a large measure is due to the



Pat Dwyer Asks Directions

cooperation which the parent organization receives from its local members. Without any doubt the Cincinnati Convention of the American Foundrymen's Association will go down in the history of the Association as the most successful non-exhibit convention held to date. To the members of the Cincinnati District Chapter of A.F.A. goes a lion's share of any credit due for its success. The American Foundrymen's Association takes this opportunity to sincerely thank the members of the Cincinnati District Chapter, its officers, and committees for the wholehearted cooperation given in staging this, one of its most successful conventions.

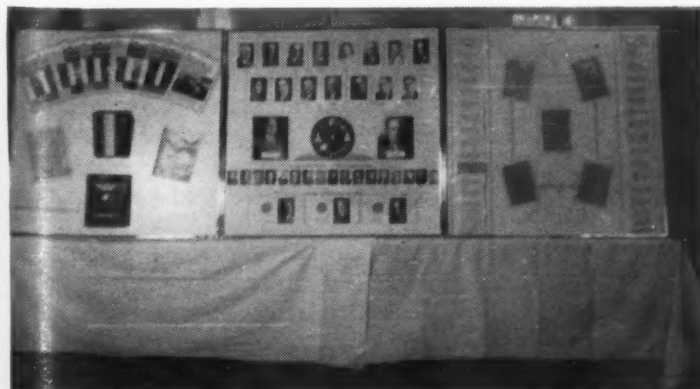
## Apprentice Contest Grows in Interest

INCREASED interest in the National Apprentice Contests this year was one of the highlights of the 1939 annual convention of A.F.A. Not only were the number of entries larger than ever before but the number of firms participating in local and national contests was

greater. In all, nearly 100 firms employing regularly indentured apprentices took part in various local contests or submitted castings or patterns for judging in the national contest. Interest was further demonstrated in the display of patterns and castings. The many comments heard indicated greater interest in the contests than ever before.

This year, contests were held in gray iron, steel and non-ferrous molding and patternmaking. Winners in the various contests are presented with certificates and cash prizes of \$40.00 to first place winners, \$25.00 to second place winners and \$15.00 to those placing third in their respective contests. The prize funds are made available through the Board of Awards of A.F.A.

There were seven entries in



A Display Board Showed Some of the Activities of A.F.A.

the non-ferrous molding contest, 10 in steel molding, 16 in gray iron molding and 28 in the patternmaking contest. These represented entries from both local contests sponsored by Chapters of A.F.A. and foundry groups and from individual firms.

Winners in this year's competition are as follows:

#### Steel Molding

**First Prize**—Joe Birkenheuer, Crucible Steel Casting Co., Cleveland, Ohio.

**Second Prize**—Ivan Tudor, Continental Roll & Steel Foundry Co., East Chicago, Ind.

**Third Prize**—Gilbert Willms, Bucyrus-Erie Co., Milwaukee, Wis.

#### Non-Ferrous Molding

**First Prize**—Joseph Wyban, Gluntz Brass Foundry Co., Inc., Cleveland, Ohio.

**Second Prize**—Stanley Burford, Wellman Bronze & Aluminum Co., Cleveland, Ohio.

**Third Prize**—Norman Knuth, Standard Brass Works, Milwaukee, Wis.

#### Gray Iron Molding

**First Prize**—Lewis W. Green-slade, Brown & Sharpe Mfg. Co., Providence, R. I.

**Second Prize**—Frank Kolenc, Sheboygan Foundry Co., Sheboygan, Wis.

**Third Prize**—Charles Maull, Semi Steel Castings Co., St. Louis, Mo.

#### Patternmaking

**First Prize**—George Gedeon, Cleveland Trade School, Cleveland, Ohio.

**Second Prize**—John Merz, Cincinnati Milling Machine Co., Cincinnati, Ohio.

**Third Prize**—George W. Wert, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

The following members of the Cincinnati Chapter acted as judges in the national contests:

#### Steel Molding

Richard Ashburn, Sawbrook Steel Castings Co.

Elmer Radabaugh, Lunkenheimer Co.

O. H. Moeller, Cincinnati Steel Castings Co.

#### Non-Ferrous Molding

Wm. Greener, Powell Valve Co.

John Bradford, Edna Brass Mfg. Co.

E. L. Bunting, Lunkenheimer Co.

#### Gray Iron Molding

M. Brockman, Lunkenheimer Co.

Wm. Rengerling, Cincinnati Milling Machine Co.

W. Scott, Williamson Heater Co.

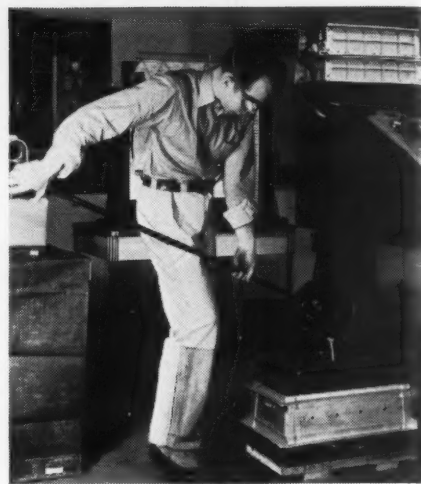
## Ladies Have Grand Time at Convention

THE 175 ladies who accompanied foundrymen to the 43rd Annual Convention of A.F. A. had a very full and enjoyable time. On Monday afternoon, May 15, they were entertained with a reception and tea at the Netherland Plaza Hotel.

Tuesday's activities consisted of a visit to the Taft Museum and luncheon at the Netherland Plaza. Many ladies attended the ball game in the afternoon, while the remainder enjoyed bridge.

Wednesday noon found the ladies at the delightful Fox and Crow Inn where they enjoyed an excellent lunch and saw the beauties of the Ohio countryside. In the evening they attended the Annual A.F.A. Dinner and Dance.

The close of the official entertainment on Thursday came all



Pouring the Casting in the Pattern Demonstration

#### Patternmaking

Herman Meyer, Superior Pattern Co.

Charles Appel, Lunkenheimer Co.

L. Naberhaus, Cincinnati Milling Machine Co.

too soon for these members of the fair sex. However, before parting, they were entertained with a trip and luncheon at either the Hamilton or Middletown plants of the American Rolling Mill Company as guests of the company. Those not taking the trip were entertained at the local country club where they enjoyed golf, bridge, etc. In the evening, the ladies enjoyed a buffet supper at the club.

#### Pattern Demonstration

##### Excites Interest

THE outstanding demonstration of the Cincinnati Convention was the one on patternmaking by J. E. Kolb, Caterpillar Tractor Co., Peoria, Ill. The accompanying photograph shows the apparatus used by Mr. Kolb in his demonstration. In addition to showing the various tools used for wood and metal patternmaking, he described the manufacture of patterns and core-boxes, dryers templates, etc. After describing the making of certain pattern equipment, a mold was made from the pattern and the mold poured from metal

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A Display of Tools, Patterns, Core Boxes, Templates, Blueprints, etc., Featured the Patternmaking Demonstration

actually melted in a small furnace in the demonstration room.

The demonstration and exhibit made a great "hit" with those attending the meeting and Messrs.

Gregory and Kolb, Caterpillar Tractor Co., Peoria, Ill., deserve commendation for assembling so valuable and interesting a demonstration.

## *Plant Visitations a Prominent Activity of Convention*

MANY foundrymen availed themselves of the excellent plant visitation program presented at the Cincinnati Convention. With three organized visitations originally planned, the visit to the Wheeling Steel Corp., Portsmouth, Ohio, had to be cancelled due to the coal shortage which necessitated banking the blast fur-

visitations, many plants in Cincinnati and the surrounding

## *First Non-Ferrous Division Dinner Delightful Success*

THE first Non-Ferrous Division dinner, held in the Roof Garden, Gibson Hotel, Cin-

country were open for inspection and those in attendance visited the types of plants in which they were most interested.

The Plant Visitation Committee of the Cincinnati Convention Committee deserves a vote of thanks from all those attending the convention for the fine program they prepared. Philip Cone, Cincinnati Milling Machine Co., was chairman of that committee.



W. B. Stout Addresses the Non-Ferrous Division Dinner

nace scheduled for visitation. Monday afternoon, activities at the convention were halted to allow all present, if they wished, to visit the plant of the Cincinnati Milling Machine Company. Over 400 availed themselves of this opportunity and returned to resume sessions that evening, tired but happy over a thrilling experience.

The final organized visitation was held Thursday afternoon to the plant of the Hamilton division of the American Rolling Mill Co., Middletown, Ohio, and to the company's rolling mill at Middletown, Ohio. Those returning from the trip reported an excellent time. Many ladies also went on this trip and were entertained while the foundrymen inspected the various plants on the schedule.

In addition to the organized

cincinnati, Tuesday evening, May 16, was a decided success. Over 85 members, guests and their ladies were entertained by artists of the Cincinnati Conservatory of Music and our own A. W. Weston, Chicago Hardware Foundry Company, North Chicago, Ill.

The principal speaker of the evening was William B. Stout, president, Stout Engineering Laboratories, Detroit, who spoke on "Romance of Aviation." Mr. Stout traced the progress of America from the old covered wagon days to the present and described how science has played an important part in the development of our country. Mr. Stout, said by Ripley to be the only man ever to borrow a railroad, also described his experience in building the first streamlined train.

H. J. Roast, Canadian Bronze Co., Montreal, chairman, and members of the Non-Ferrous Division Committee, deserve congratulations on the splendid dinner and program.

## *International Foundry Congress Opens*

FRIDAY and Saturday, June 9 and 10, when overseas visitors are expected to arrive in Great Britain and proceed to London, the 1939 International Foundry Congress will begin. However, the official opening of the Congress will be Tuesday, June 13. On that day, Prof. W. L. Braggs, director, Cavendish Laboratory, University of Cambridge, will give the fourth Edward Williams Lecture as the first event of the program. From Tuesday afternoon, June 13, to Thursday afternoon, June 15, presentation and discussion of papers will take up the majority of the wakeful hours of the foundrymen. Friday, June 16,

(Concluded on Page 12)



Off to the Ball Game

# A. F. A. Elects New Officers and Directors

**H.** S. WASHBURN, president, Plainville Casting Co., Plainville, Conn., was elected President, and L. N. Shannon, vice president, Stockham Pipe Fittings Co., Birmingham, Ala., was elected Vice President of the American Foundrymen's Association at its annual business meeting, held May 17, in the Roof Garden, Gibson Hotel, Cincinnati, Ohio.

In presenting the names of the members nominated, Past President James L. Wick, Jr., Falcon Bronze Co., Youngstown, Ohio, Chairman of the Nominating Committee, stated that since no other nominations had been received, he moved that, in accordance with Article X, Section 1, of the By-Laws, the secretary be instructed to cast the unanimous ballot for the nominees. On being seconded, the ballot was so cast declaring the following elected officers and directors of the American Foundrymen's Association:

H. S. Washburn

**H.**ENRY S. WASHBURN, elected president of the American Foundrymen's Association, is well fitted to lead the association, having served as a director and vice president. His picture appears on the inside front cover page of this issue.

Born in Brooklyn, N. Y., he received his early education at St. Paul's School, Garden City, N. Y., and later attended Yale University.

Mr. Washburn's first commercial position was as bookkeeper with the Corn Exchange Bank of New York. From 1906 to 1917, he held various positions as clerk, credit man, and office manager with the D. L. & W. R. R., H. B. Claflin Co., and Butler Bros. of New York City. From

1917 to 1921, Mr. Washburn was purchasing agent, Turner & Seymour, Torrington, Conn. Since 1921, he has been president and treasurer of the Plainville Cast-



Vice President L. N. Shannon,  
Stockham Pipe Fittings Co.  
Birmingham, Ala.

ing Co., Plainville, Connecticut.

Mr. Washburn has been very much interested in foundry technical association work, is a member of the Connecticut Foundrymen's Association, the American Foundrymen's Association, National Founders' Society, and the Gray Iron Founders' Society.

L. N. Shannon

**L.**ESTER N. SHANNON, elected Vice President, is vice president, Stockham Pipe Fittings Co., Birmingham, Ala. Mr. Shannon is well acquainted with the work of the Association, having served as a director and was the first chairman of the Birmingham District Chapter.

Born in Carbon Hill, Ala., Mr. Shannon received his early edu-

*President for One Year*—H. S. Washburn, Plainville Casting Co., Plainville, Conn.

*Vice President for One Year*—L. N. Shannon, Stockham Pipe Fittings Co., Birmingham, Ala.

*Directors for Three Years*—

W. B. Coleman, W. B. Coleman & Co., Philadelphia, Pa.

C. R. Culling, Carondelet Foundry Co., St. Louis, Mo.

O. A. Pfaff, American Foundry Equipment Co., Mishawaka, Ind.

Marshall Post, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

F. J. Walls, International Nickel Co., Inc., Detroit, Mich.

The following are short biographical sketches of the careers of the newly elected officers and directors:



Director Marshall Post,  
Birdsboro Steel Foundry &  
Machine Co., Birdsboro, Pa.



Director C. R. Culling,  
Carondelet Foundry Co.,  
St. Louis, Mo.



Director F. J. Walls,  
International Nickel Co.,  
Inc., Detroit, Mich.



Director W. B. Coleman,  
W. B. Coleman & Co.,  
Philadelphia, Pa.

cation in the public schools there and later attended Birmingham Southern College from which he was graduated with a B. S. degree. Following graduation, he immediately became associated with the Stockham Company in whose service he has risen to his present position.

#### William B. Coleman

**WILLIAM B. COLEMAN**, elected a director for a three year term, is president, W. B. Coleman & Co., Philadelphia. He is a past chairman of the Metropolitan Philadelphia Chapter and at present is its secretary-treasurer. He also is a past president of the American Society for Metals.

A graduate of the University of Pennsylvania, Mr. Coleman obtained his first commercial experience in the laboratories of the Midvale Steel Company, after which he was transferred to the open-hearth department and in 1915 was made superintendent of open hearth furnaces. In 1916, he was sent to the Coatesville plant of this company, where he evolved a process for the manufacture of shell steel.

In 1918, Mr. Coleman became superintendent, Tacony Ordnance Corp., at the same time serving as civilian consultant, Ordnance Dept., Washington, on the manufacture of steel for gears. After the war, the Tacony Corporation became one of the companies of the Penn Seaboard Steel Corp., and Mr. Coleman remained as general superintendent of that plant until 1922. At this time, he organized the W. B. Coleman & Co., a firm conducting analytical, chemical, and metallurgical laboratories, at the same time consulting on the manufacture of steel and foundry and power plant operation.

Mr. Coleman has been prominent in technical association work, having been for a number of years a member of the American Chemical Society, A.I.M.E., and A.S.M.

#### Chambers R. Culling

**CHAMBERS R. CULLING**, vice president and general manager, Carondelet Foundry

Co., St. Louis, elected a director for three years, has taken an active part in the work of the Association for many years and has been especially active in the work of the St. Louis District Chapter, where he is serving as a director and as chairman of its Apprenticeship Committee.

Mr. Culling first began work in the foundry in 1911, during school vacations, as an apprentice molder. Later, he attended classes in mechanics and pattern-making at the David Ranken Jr. School of Mechanical Trades. Following that, he became connected with the Remmers Pattern Co., St. Louis, as a pattern-maker. In 1915, he began the



Director O. A. Pfaff,  
American Foundry Equipment Co.,  
Mishawaka, Ind.

study of mechanical engineering and at the outbreak of the World War in 1917 enlisted in the U. S. navy and served for 2 years on board the U.S.S. Vestal in the engineers division. After discharge from the navy in 1919, Mr. Culling became foundry superintendent, Security Stove & Mfg. Co., Kansas City, Mo., and worked in that capacity until 1924 at which time he became superintendent, Carondelet Foundry Co., St. Louis. In 1935, he succeeded his late uncle, Horace R. Culling, as vice president and general manager.

#### Otto A. Pfaff

**OTTO A. PFAFF**, vice president and general manager, American Foundry Equipment Co., Mishawaka, Ind., elected a director for a three year term, has been interested in the work

of the Association for many years and now is serving as a director of the recently organized Michiana Chapter of A.F.A.

Born in New York City, Mr. Pfaff received his early education in the schools of Yonkers, N. Y., and later attended New York University where he specialized in economics, organization and management. In 1916, he became associated with the Sand Mixing Machine Co., New York, the forerunner of his present company, the American Foundry Equipment Company. He has been connected with that company during his entire industrial career. In 1920, he was made treasurer; in 1926, secretary-treasurer; in 1932, vice president; and in 1935, vice president and general manager, the position he now holds. He has been a director of the company since 1920.

Interested in organization work, Mr. Pfaff is a director of the Foundry Equipment Manufacturers Association, and member of the U. S. Chamber of Commerce, Industrial Manufacturers Association, National Association of Cost Accountants, and National Association for Management.

#### Marshall Post

**MARSHALL POST**, elected a director for a 3 year term, is vice president Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa. Mr. Post previously has served as director and vice president and is the immediate past president of the Association.

Born in San Antonio, Texas, Mr. Post has had an extended career in the foundry industry, beginning as an apprentice molder with the American Steel Foundries, Granite City, Ill. His apprenticeship lasted three years and following completion of the course, he became a journeyman molder with the Commonwealth Steel Co., Granite City. Later, he became associated again with the American Steel Foundries, first as assistant foreman, then as night foreman and finally as foundry superintendent. In 1918, he accepted a position as superintendent of foundries, Marion

Steam Shovel Co., Marion, Ohio, but returned to the American Steel Foundries in 1920 as works manager of the Sharon, Pa., plant of that company, and later as works manager of the Thurlow plant, Chester, Pa. Since 1925, Mr. Post has been vice president and works manager, Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., the position he now occupies.

F. J. Walls

**FRED J. WALLS**, International Nickel Co., Inc., New York, Manager of the Detroit, Mich., offices of that company, elected a director for a three year term, is well fitted for his new office through his many committee activities and his di-

rectorship of the Detroit Chapter of A.F.A.

Born in Oakland County, Mich., he received his technical education at the University of Michigan, Ann Arbor, Mich., where he specialized in metallurgy. On leaving school, he entered the employ of the Wilson Foundry & Machine Co., Pontiac, Mich., and rose to chief metallurgist. Later, he accepted a position as metallurgist, Eaton-Erb Foundry Co., Vassar, Mich. He assumed his present position in 1935.

Mr. Walls is very interested in association work and is a member of A.F.A., A.S.M. and A.S.T.M. In 1930, Mr. Walls presented the Annual Exchange Paper to the Institute of British Foundrymen.

and base plates in general, engine cylinders, boiler fittings and mountings, pumps, cocks, valves, columns and pipes, ornamental columns, strap pulleys, sheave wheels, chain barrels, machine tools, chilled work, loam patterns, molding machine practice, pattern storage and equipment.

The numerous drawings which illustrate the points discussed are clear, readable and understandable. They are presented in such a manner that in case of difficulties, many could be used as references.

Of special interest is the appendix which is devoted to tables of diameters, circumferences, squares, cubes, square and cube roots, areas of circles. Also included in this section is data on weights of cast iron balls, dimensions for pipe flanges and sockets, weights of solid cylinders in cast iron, weights of timber, and other information of importance to foundrymen, designers, engineers, etc.

This publication is believed to be sufficiently varied to prove instructive in the various branches of patternmaking. The practical patternmaker, foundryman, draftsman, designer, and executive will find this book a very handy reference volume.

### *International Congress*

(Concluded from Page 9)  
has been set aside for all day visits to foundries in the London area.

Beginning Sunday, June 18, foundrymen and their ladies will be informally received and taken sightseeing. Following these activities, they will be entertained at a garden party at the home of Mr. and Mrs. Barrington Hooper.

The receptions, banquets, sightseeing trips and excursions will last until the Congress closes on Saturday.

For those overseas visitors who would like to tour Great Britain, two trips have been arranged. One is to run from June 18 to 24 and the other to continue from June 24 to 30. On these tours, visitors will be entertained with plant visitations, receptions, luncheons, etc., in the foundry centers of Great Britain.

AMERICAN FOUNDRYMAN

## *Foundry Sand Research Committee Approves Changes*

**AT A MEETING** of the Foundry Sand Research Committee, held during the recent Cincinnati Convention, the committee recommended the following changes be made its tentative standard for purchase forms for foundry sand:

All tolerances in purchase forms for molding and core sands, to be deleted and that the footnote occurring at the bottom of the molding sand purchase form, which at present reads "The tolerances given are only suggested and may be adjusted by agreement between producer and consumer," be changed to read "Any tolerances are to be adjusted by agreement between producer and consumer." (See pages 83 and 84, "Testing and Grading Foundry Sands and Clays.")

The committee also recommended that the following be inserted in its standard specification for A.F.A. Grain Fineness Classification:

"It is understood that anyone is at liberty to order sand by its actual grain fineness number instead of by grain class." (See page 103, "Testing and Grading

Foundry Sands and Clays.")

The third and final change voted by the committee was to change the term, now listed on page 160 of the book, "Testing and Grading Foundry Sands and Clays," as "Natural Sand" to "Natural Molding Sand."

Those having copies of this book are requested to make the corrections in their copies as listed above. Members who do not have this book are entitled to one copy gratis, which may be obtained by addressing the Technical Secretary, American Foundrymen's Association, 222 West Adams St., Chicago, Ill.

### *Book Review*

*Patternmaking for Engineers*, by J. G. Horner and P. Gates, sixth edition, cloth bound red, 31 chapters, 390 pages, 558 illustrations, price 15c net, published by The Technical Press Ltd., 5 ave Maria Lane, Ludgate Hill, E.C.4, London, England.

This book covers the fundamentals and principles of patternmaking in an easily understood manner. Information is given on joints in patterns and molds, principles and details of pattern construction, core prints and boxes, use of cores and draw-backs, flasks, engine bed

# Business Management Has A Job

## Second Annual Board of Awards Lecture

By Fred H. Clausen



The following is the text of the Second Annual Board of Awards Lecture presented by Mr. Clausen at the Annual Business Meeting of the American Foundrymen's Association, Cincinnati, Ohio, May 17, 1939. Mr. Clausen is president, Van Brunt Mfg. Co., Horicon, Wis., and is a former vice president of the Chamber of Commerce of the United States; a past president of the Wisconsin Manufacturers' Association; chairman of the Board of Directors, Holeproof Hosiery Co., Milwaukee, Wis.; a director of Deere & Co., Moline, Ill.; vice president, Farm Equipment Institute; and a member of the Board of Regents, University of Wisconsin, Madison, Wis.

The Annual Board of Awards Lecture of the American Foundrymen's Association was established in 1938 to bring addresses on current industrial management problems to members of the Association.

**A** FEW evenings ago, over the radio, I heard General Johnson remark that American business managers are "in the Dog House" so far that their influence on current events doesn't amount to much. If that statement is at all accurate then I plead today for the privilege of standing outside and doing some howling. It might even be suggested that Business Management be unleashed and permitted to hunt in the highways and byways for jobs for idle men and willing hands to do.

In the minds of many, the American system of private business enterprise has failed. They believe that it has proved unequal to the task of supporting an economic structure that provides for the general welfare of the people. This indictment is all the more serious because there has been coupled with it the charge that this failure has been deliberate and has been prompted by selfish and unfair advantage. That depressions have occurred and recurred there can be no doubt. We are yet in the midst of a business slump with all its attendant distress of unemployment and loss to investors.

I put this question to you as men connected with the operation of business enterprise. Do you plead guilty to the charge that through incompetence and narrow minded selfishness you have brought about the clogging of the American business machine and the human hardships resulting therefrom?

I anticipate your indignant denial and follow with these queries:

Who or what is to blame for these depressions?

What is the responsibility of Business Management?

My mission here is to outline to you the job of business management and our responsibility in finding the answer to these questions.

*What Is Business?* It is the production of materials, goods and services and their movement in commerce by private enterprise. The same operations by government, voluntarily or by compulsion, are obstructions to business and are not in accord with the American Economic System. Unless you are willing to accept that premise my statement made to you will be a waste of time.

*Who Are Business Men?* The farmer who raises a crop, the baker who bakes a loaf of bread, the clerk in the store who receives wages for services rendered, the doctor or lawyer who is paid for his professional skill, all are parts of business. In the aggregate, they are business. Any general attack on business is thus an attack on every one who earns a living, or whose savings help others to earn their living.

I want to make a plea for private business and industrial management, for a better understanding of the job to be done and the conditions under which that job is performed. Business is getting tired of the role of "Whipping Boy" for our economic shortcomings.

### Genesis of Management

It is trite to say that modern industry and commerce is an evolution. That the complexities of present day production and distribution create new problems. While those things are true, they do not destroy fundamental economic laws, that to distribute you must first produce; that to divide you must first add and multiply; that wages paid and dividends paid alike must first be earned; that there is no substitute for work and thrift; that you can't get something for nothing; that government spending is no substitute for private industry.

In the conduct of modern business the position of manager is a comparatively recent development. In the first instance there were only three principal parties in interest (1) workers (2) stockholders

(3) public. Modern business has added (4) management and modern government has prescribed (5) federal regulation and control.

The managers of substantial business enterprises today, in a large majority of cases are only minority stockholders and hold their positions only during "good behavior" and intelligent operation.

They are human beings with jobs to do, working from day to day to promote the welfare of every party interested in business enterprise including the workers, the stockholders, the public and the government itself. In any business corporation when these things are not done the individual manager must step aside for another or the enterprise fails.

Isn't it time that the public generally should have a better understanding of the job of this fellow we call, the "Manager"?

#### Division of Business

The function of an organized business can be divided into five general classifications,—buying, making, selling, financing and last but not least, public relations. Management must comprehend and deal with all of them. None of them can be slighted and there is none more important right now than public relations. It explains the place of our Chambers of Commerce, our Trade Associations and cooperative effort among intelligent business men. Any manager who ignores his obligations in the direction of public relations has short vision and a narrow horizon.

I will not dwell upon these divisions except to state them. I want to revert to the fellow known as the "Business Manager." He is the fellow that demands our interest now. He has been called nasty names and pilloried on platform, even in the pulpit.

It is necessary that he be understood because he has a job to do. He has definite obligations and responsibilities to all the other parties in interest. His ability to do that job is the basis for a return to economic prosperity in this country today.

Just to outline some of these I submit the following:

#### Duties of Management:

##### To the Workers—To provide for

1. Safe and healthful employment conditions.
2. Steady employment, to the utmost extent possible.
3. Good wages, measured by work done and ability to pay.
4. Mental satisfaction that comes from intelligent placement, good foremen and friendly relations.

##### To the Stockholders:

1. Permanency of the enterprise.
2. Steady employment for the workers.
3. Reserves for contingencies.
4. Up-to-date methods and product.
5. Growth and development.
6. Fair dividends on investment.

##### To the Public:

1. Production of useful products.
2. Sales at fair prices.
3. Steady employment and fair wages.
4. Favorable working conditions.
5. Promotion of good citizenship.

##### To the Government:

1. Acceptance of reasonable regulation.
2. Payment of taxes when fairly imposed.
3. Steady employment at fair wages.
4. Keep concerns solvent and growing.
5. Maintenance of open and fair competition.

These are the essentials for the successful operations of the American Economic System. Their observance, by a vast majority of men charged with the job of management has produced over the years the most wonderful advance of human progress in the history of mankind.

Then why do we falter? Why do we stumble and turn to see if we are going in the right direction? The answer can be found in the vast sweep of economic forces that cannot be stayed by man made laws; in human limitations, in misunderstandings, in hostilities that promote conflict between groups promoted by governmental sanction and intermittent antagonism of the government itself towards the great majority of business men classified under the head of Management.

My discussion today must deal largely with this fifth element of public relations. It is the most disturbing and unsettling factor that has its impact on the whole structure of business enterprise and on the conduct of the job of management.

#### Employment Difficulties

I refer to employment relations and find there a rising tide of events that has made the job of management often well nigh impossible.

When depression engulfed this Nation and the World, President Hoover called upon management to resist unemployment by spreading work and shortening hours. The response was general but the results were unsatisfactory. Billions of dollars of corporation reserves were expended and thousands of workers retained on payrolls for weeks after the sale of factory production had stopped.

The forces against which we fought were too great. The unemployed army grew and those working on shortened hours, unmindful of the good intentions of such a program, became dissatisfied with their weekly pay checks.

With millions unemployed the new administration assumed the role of deliverer. With that attitude I can find no fault. The purpose was praiseworthy, the performance not always good.

Where did it leave business enterprise? Government assumed an impotence on the part of management founded on a charge that industry had created the conditions that brought the depression. In employment relations it accepted the preamble

statement of the American Federation of Labor that the relation of manager and worker is inherently one of hostility and therefore a program of collective action must be ordained to take from management the things that labor should possess.

This position taken by the government has brought industrial management into disrepute because the public generally does not understand our attitude. Intelligent managers have never questioned the right of collective bargaining. It is accepted today to the extent that it will promote the fulfillment of the obligations of management to the workers, stockholders, public and the government that I have outlined to you.

I dare to make this statement. Management generally would be willing to go along with unionism if labor and the government will accept a few fundamentals that should control industrial relations.

1. The relationship of employer and worker is inherently one of cooperation and not of hostility.
2. Wages paid must be related to work done, more pay for less work as a slogan is economically wrong.
3. The right to work shall not be denied to any man because of membership or non membership in any labor organization.
4. The right to strike and leave work shall be accompanied by lawful picketing only, free from violence and intimidation.
5. Sit down strikes are intolerable.
6. All parties to labor agreements must accept legal and moral responsibility for their acts.

Management has a job to do. It is now generally recognized that hauling the present recession can be accomplished only through profitable employment in private industry and commerce.

We are willing to bend every effort in that direction if these efforts can be supported by fair and intelligent cooperation on the part of government and the general public.

#### Labor Legislation

I do not propose to discuss in detail the provisions of the Wagner Act, the Walsh Healey Act or the Wages and Hours law. You are well acquainted with the controversies these laws have created. There is just this much to be said. Business management always prefers to deal with realities and inasmuch as these laws are here, with little chance of repeal, there is only one course of action that we should follow. Use our influence such as it is for the amendment and modification of these enactments so as to make them workable and protect the rights of workers and management alike. Our interest and the interest of Congress should be in the general welfare as exemplified in a prosperous and growing private industry.

JUNE, 1939

#### Social Security Act

This law was passed by an almost unanimous vote of both houses of Congress. It was not then and is not now a political issue. The longing for economic security is a justifiable urge of organized society.

Again let us look to fundamentals. What is security and who is to provide it? Security is purely a relative term controlled by human limitations and can rise no higher than its source. There is no such thing as absolute security and it is well for us humans that this is so.

Any nation, family or individual reposing in the fancied shelter of security without ambition or responsibility to earn their way or promote the welfare of society, are destined through dry rot and decay to lose that security which they assume to possess.

Some 16 years ago, as a representative of Wisconsin Manufacturers I entered into a controversy with Dr. John R. Commons of the University of Wisconsin who had advanced the idea that unemployment was preventable if management set its mind to the task. He, therefore, urged a law that would compel continuity of employment by penalizing management for discharging workers without cause.

Out of this agitation grew the demand for a state law, providing for compulsory unemployment insurance. In 1932 the first law on this subject in Wisconsin was enacted. Now there are similar or dissimilar laws in every state and territory of the United States.

Our interest in this subject today is the general assumption that these laws will provide security to the Nation's workers and that business management will supply the means.

I am sure that forward looking employers of labor have a keen sense of their obligation to provide as much security to job holders as conditions within their control will make possible. My experience, however, justifies the warning to all who are concerned that unemployment compensation must justify itself as a form of dismissal wage and not as a dole or poor relief. There is basis for this alarm if we observe the purpose of so called social reformers to make unemployment benefits available with little regard to the length of service or earnings of the beneficiaries.

To my mind there are certain principles that must be maintained to justify compulsory unemployment payments as a part of our industrial system.

1. The receipts of benefits must be based on work done.
2. The number and amount of benefit payments should be measured by the weeks worked and earnings of the prior yearly period.
3. The worker should understand that the benefits he is receiving are paid out of a

fund that was established during his term of employment. The best way to do this is through the company reserve system.

4. Management should have the incentive through experience rating to promote continuity of employment and reduce the impact on the fund through excessive payments.
5. Abuses such as excessive withdrawals from pooled funds by designing employment and management and payment of benefits except for involuntary unemployment must be avoided if this system is to be maintained at a high standard.

Business management can well afford to cooperate with its workers in the establishment of savings funds in various forms to promote their welfare. On that basis should be developed unemployment compensation, old age benefits, industrial pensions, group life insurance and other forms of reserves. Plans of this kind are in keeping with the American idea of thrift and saving and are the best insurance against the easily developed idea that the world owes us all a living.

It did not require the enactment of the social security law to inaugurate this program. Forward looking business management had been working on it for years and made great strides in advance. The public can have the assurance of continued efforts to improve this program unless restrained by government interference based on the assumption that government can plan better than management can perform.

#### Federal Taxation

It has been my chore during the last several years to act as Chairman of the Federal Finance Committee of the Chamber of Commerce of the United States. Our principal concern has been the deterrent effects of excessive spending and taxation on the successful conduct of private business enterprise.

To my mind there is no other problem looming larger on the horizon of national affairs than this one.

From the standpoint of the job of business management in its relation to the welfare of men who labor, of stockholders who venture and of the public who are dependent on increased number of the employed in private enterprise, there is no greater burden or retarding influence on national prosperity than this one. Our stake is public relations as related to the load of taxation retarding business progress is definite and important. It must be understood by all of us and by the general public who in the last analysis make the decisions on government policy.

From the beginning down to the recent past, taxes were levied for the sole purpose of meeting the cost of government economically administered.

Under such a policy federal taxation was never a burden as it constituted only a small item of the

cost of doing business. The problem of taxation was local and not federal. Today how different.

We have been compelled to become nationally tax conscious and the emergencies of war or depression do not supply the only reason. Gradually new principles of taxation have been evolved which a majority of our people have been inclined to accept because the impact on their economic well being has been disguised by the methods employed to evade the ultimate consequences.

From the very nature of our engagements and our responsibilities to workers, stockholders, the public and the government itself we must deal with the realities of things as they are. It is high time to make a reckoning of both latitude and longitude, to determine where we are and where we are going.

#### Government Deficits

You, as business men must recognize that the facts I am about to recite to you have more to do with creating the present depression and retarding the re-employment of men and money in industry and commerce than any other prudent business men with the responsibility of maintaining their institutions are becoming alarmed with the course of events at our National Capitol. As business men what must be your reaction to the following state of facts?

1. For the 9th consecutive year the federal treasury is again confronted with a growing deficit, this year 4 billion dollars. This is in spite of oft repeated statements made over the years that the budget would be balanced. This is the largest deficit of any year except for extra payment of soldiers bonus in 1936.
2. For this fiscal year ending June 30th next the administration revised budget shows that the government is spending 9½ billion dollars, the largest amount ever expended in a peace term year. It is nearly 2 billion above 1935 and nearly 4 billion above 1933 when the national economic emergency was most acute.
3. This 9½ billions total is 1.8 billions or 20% above the past year, most of the increase chargeable to pump priming. Just a few months ago the President declared that the country should prepare itself for an annual budget of 7 billion.
4. Expenditures for this year for recovery and relief and public works will be over 3,000 millions.
5. So called "ordinary expenditures" swelled to 5 billion, increased 2 billion in 4 years.
6. Government receipts:
  - 1933—2 billion
  - 1934—3 billion
  - 1936—4 billion
  - 1937—5 billion
  - 1938—6¼ billion
  - 1939—5 billion

7. Government debt by the end of this fiscal year 40,650 million, increase of  $3\frac{1}{2}$  billion in one year.

8. Interest charge of 1 billion or 20% of total government revenues. This does not take into account sinking fund requirements which are now ignored.

As business men, endowed with some degree of common sense, developed through long years of practical experience, you are certain in your own minds that the institution you are dealing with is "going down hill" and you are convinced that this cannot be allowed to go on indefinitely if disaster is to be avoided.

You, who are required to meet family budgets and must of necessity balance the budgets of industries in your charge, know as well as I do that this course cannot be followed indefinitely.

Isn't it a fact that any institution which lives on its capital instead of its income is headed for bankruptcy?

As American business men, we are sounding the alarm and we propose to continue to do so until public opinion is aroused.

We know that the management (administration) has become impatient and says to us, you do not understand. You are short sighted and think only of yourselves. Do you realize that there are millions of men and women out of work who must be given jobs? Our answer is yes, we realize that just as fully as you and our sense of obligation is just as great as yours possibly could be. That is exactly the point of our disagreement. You know that every effort must be made to restore jobs to idle men but the method you ordain will block a fuller flow of production enterprise, of private industry and commerce which is the only way we know to revive prosperity in this country. That is the end we seek that we have a right to assume, is your objective.

It has been the policy of the present administration to rely on the power of taxation and public borrowing to carry on its program of social betterment. It is the easiest way but not the right way. As a means of meeting temporary emergency distress that is a necessity. As a method of creating permanent jobs for idle men in private industry and securing stable prosperity it cannot work because it consumes the body it feeds upon. It knocks the props out from under the pillars that are relied on to support it.

#### Government Spending

Roughly speaking we can divide government spending into three classes which correspond with its growth.

1. Necessary administration costs.
2. Improvements in service and facilities.
3. Pump priming.

We accept the first as an obligation of good citizenship. We approve the second to the extent that we can afford without injury to the produc-

tive forces of the nation. We condemn the third as defeating the very purpose for which it was contrived.

Under the American system of private enterprise this nation has added to its invested capital through the economic production and distribution of useful goods and services. These have been sold to the consumer at an average profit to the maker and user. Out of this free flow of business and commerce have come the earnings which men have ventured to the attainment of even greater economic progress. Over the years we have been taught to believe that prosperity comes from the production of useful things and saving some of the proceeds.

#### Pump Priming

Through human limitations there have been occasional haultings in the process. When these times of depression have come upon us, we have relied upon traditional fortitude to conserve as much as possible our savings of other years, deny ourselves through thrift and economy and proceed again to climb upward.

We are now told there is an easier way. The government will plan it differently. Regardless of income, spend more and more. Increase the taxes on the producers of the nation and spend over and above the receipts whatever amount of the principal that can be borrowed.

To the mind of a vast majority of business men this is a strange doctrine indeed. Our family experience belies it at every turn. How can the United States made up of 30,000,000 families reverse the formula of home economy and expect to create prosperity for our people?

Strange as it may seem this program of government spending is put forward to catch the public sentiment that "What Helps Business Helps You." While a few business men may see some temporary advantage in the gush of dollars from the public treasury your own experience tells you that in the long run that this hypodermic injection will leave the economic body more limp and dejected than ever after a few hours of limited stimulation.

This is not idle conjecture. The lesson of the recent past is before us. We are now reacting to the same prescription administered in varying doses through the past six years. And where are we? Worse off, in fact, because we have a tremendous increase in the burden of debt and interest charges which must be paid for or else resort to repudiation and experience of moral breakdown of our people.

This term "pump priming" as a happy expression of government initiative has interested me very much. To those of us with a rural background the very expression carries its own weakness. Pumps need priming when the valves are leaky and defective. The prudent householder repairs the pump and abundant streams of water are always there when you work with the handle.

I have in mind another pump experience which applies more directly to our present situation. You can remember those cold winter mornings with the thermometer below zero and your morning trip to the pump only to find it frozen solid. That meant another trip for the tea kettle and warm water applied where it would do the most good. My moral is this. If you would draw water from the well to furnish sustenance to our people do not depend on a leaky pump but thaw out the ice of excessive government exactions and send those to the well who know how to pump.

Emergency government spending as a defensive against distress is one thing. Pump priming spending as an offensive to create and sustain prosperity is quite another matter and that is what we are talking about.

Government management claims that in its great public works program it is building for the future, structures that the people need for better service and better living. The practical business man cannot fail to see that they are building liabilities greater than the assets. To do the job they are levying the peoples' capital and creating a perpetual overhead beyond our ability to sustain. Truly it can be said, it is not alone the original cost, it is the upkeep. A \$30,000 plant giving employment to a few men in a productive enterprise with prospective growth from earnings is more valuable to the future welfare of the country than any \$3,000,000 public building erected in the name of PWA.

It is a stock phrase that "We are standing at the crossroads" but as applied to the government spending policy and its relation to economic prosperity. I believe that is true. We must make the decision as to the direction we want to travel. Shall we encourage the statesman who considers it the primary duty of government to increase its regulation and control of our economic and social well being even to the extent of competition with its citizens?

If so, we must expect an even greater assessment of taxes and imposition on the people's resources. That kind of government costs more and more and some means must be found to pay for it.

On the other hand, shall we recognize that economic and social prosperity comes from the production and distribution of goods and services by private industry and commerce; in the initiative, enterprise, thrift and adventure of our citizenship as they may determine by individual choice with hope of reward for success and fear of consequences for failure. To my mind the traditional moral and physical fiber of our people can be sustained in no other way. The question to be answered now is, which way shall we go?

Of course, the expenses of government must be paid for. It is for the people to decide how much government they want and how much they are willing and able to pay for.

Likewise public opinion must decide how much employment they want in private industry and commerce, how much development and economic

progress they want. On the other hand how much pressure they want to apply to the brakes of business.

The truth of the statements I have made, most of you will admit. The question might well be asked, why tell them to us? The answer is something must be done about it if we value the future of American private business enterprise.

Under our form of government the great decisions are made by the dominance of public opinion. If our economic system is to be preserved it will be because a majority of our people will to sustain it.

The weakness of democracies is that often many blunders are made through lack of intelligent understanding before the right decision is reached. The important job, therefore, is one of education.

Who has a greater interest in obtaining an intelligent conception of the importance and necessity of private industry and commerce in maintaining and sustaining the economic welfare of the American people than those directly dependent on business enterprise?

You as representatives of business management are directly concerned because your future depends upon it. I bring this subject home directly to you as representatives of private business enterprise.

In the decade of 1926-35 the net income of all business corporations, before taxes, was 50 billion dollars. The total of all taxes was 30 billions leaving 40% compensation to the stockholder. These figures do not include social security taxes not then in vogue.

A survey of 150 corporations for 1937 shows that Taxes totalled \$291.00 per share holder, \$574 per employee.

Manifestly, allocation of corporation funds to payment of taxes reduces amounts available for wages, new equipment and expansion of facilities. Your interest, therefore, is not only general but direct.

#### Conclusion

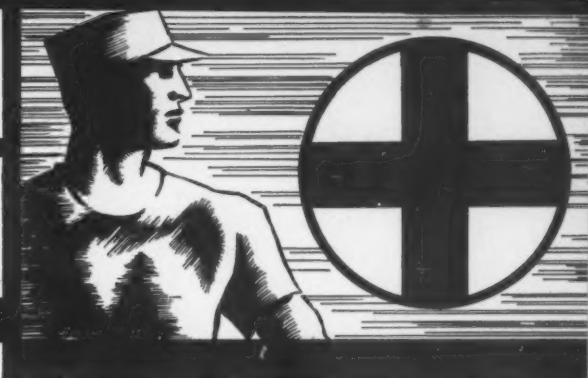
I do not want to overstay my welcome by continued and extended discussion of these problems of public relations which seem to me vital to the welfare of your several business institutions but to the future of the whole American Economic system.

My mission here will have failed if you do not accept the responsibility, which is yours, to do your part in promoting that public opinion which is essential to the right determination of the future trends of our national economic order.

The job of management has been broadened and extended to include all phases of our national life. It is not limited to the responsibilities we have assumed towards the workers and the stockholders but includes within its scope the public and the Government itself.

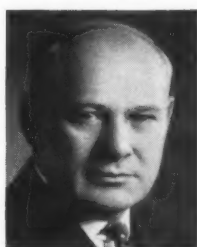
May we leave here with a new determination to accept our obligations not only as servants of our industries but for service to the future welfare of this great country of ours.

# Hygiene



## *The Employability of the Silicotic*

By Voyta Wrabetz, Madison, Wis.



This is the concluding section of a paper, "The Employability of the Silicotic," as prepared for and presented to the 23rd annual meeting of the American Industrial Physicians and Surgeons, June 7, 1938. The author, Mr. Wrabetz, is chairman of the Industrial Commission of Wisconsin and chairman of the Wisconsin Labor Relations Board. He is noted as being one of the best informed persons in the United States on legislation pertaining to workmen's compensation and occupational diseases. This paper is reprinted here, as of particular interest to employees and employers of the foundry industry. The first section of this paper appeared in the May issue of *American Foundryman*.

### General Examination Program

The general examination in the dusty trades in Wisconsin has been going on for nearly six years. Most physicians who are making examinations have *not* turned old employees out of their regular jobs because of early silicosis. Actually, they have permitted new employees to be hired who already had X-ray evidence of uncomplicated silicosis. Their only rigid rule for rejection has been that those with active tuberculosis are not permitted to continue their work. Obviously, such a rule is necessary, not only for the afflicted person so as to bring him under early treatment, but even more as a protection for his fellow employees. It is because (and almost solely because) of these active tuberculosis cases, which are not discovered unless examined, that examinations of dusty trade workers are necessary and must continue.

### The Worker Who Has Silicosis In Its Earlier Stages

What of the worker who has silicosis in its early stages? Is it safe to keep him at work? Will he develop disability? Will he develop superimposed tuberculosis?

In Wisconsin we continually see workers who have reached the age of forty or fifty years who have worked for twenty or thirty years in massive concentrations of silica dust and who are doing hard manual labor every day with no appreciable slowing down of efficiency. However, remembering that silicosis is a developing condition, especially if heavy exposure continues, what should be our procedure? By all means we should keep the man at the work in which he is happy and skilled and in which he has often earned comparatively high wages. If we discharge him, we shall not

arrest the progress of his condition. Even with a considerable future exposure only a few drops will be added to a bucket of lifetime acquisition. If we reduce the exposure to recognizable safe limits, we need have no doubt as to our course. We shall do the worker and the industry a much greater injustice by firing him than by leaving him at work.

We have, therefore, provided in the Wisconsin Workmen's Compensation Law, that an employer who discharges an employee who has a non-disabling silicosis and who can safely be retained in the particular employment, shall be liable for an amount (not exceeding \$3,500) to rehabilitate such an employee. This provision is designed to discourage the promiscuous discharge of silicotics who are fully able to work.

### Predisposition to Tuberculosis

However, we must never overlook the fact that silicosis does predispose to tuberculosis and that is true of all stages which have reached the point where they may be designated as a disease. So, in justice to any worker in any trade which involves exposure to silica, we must examine his lungs by X-ray and, if necessary, by other means of examination, to know whether tuberculosis is present. There can be no question as to our course when tuberculosis is discovered. Manifestly, the worker so afflicted is not employable anywhere until his disease is arrested and, obviously, he must never again enter a trade which exposes him to an appreciable amount of silica.

It is also necessary to deny work involving dust exposure to those with inactive but not well-healed tuberculosis. All authorities agree that non-dusty work will give these tuberculosis persons a much better chance of thoroughly healing their infec-

tion. Others being rejected are those with advanced degrees of silicosis who already have a recognizable disability. This whole group is being advised to do only non-dusty work and constitutes, I am told, not more than 2 per cent of otherwise employable workers. The employees with early degrees of simple silicosis are permitted, by most of our examining doctors, to continue their regular work.

#### Declining Number of Claims Before Commission

That this conservative procedure was the proper one is proven by the steadily declining number of claims for silicosis coming before our commission since the time it was adopted and by the resulting steady decrease in the compensation insurance rates in our dusty trades. During the years 1933 and 1934, as high as fifty silicosis claims were filed in a single month. For the past eighteen months an average of only six claims has been filed.

It can be observed that most of these are cases of infected silicosis, many of which have been under observation for many years and in which the infection antedated the examination program. Many of these cases have reached the point now where it is advisable to have the men discontinue employment in order to institute treatment to accomplish a cure of the infections.

#### How the Silicotic Can Be Employed

Certainly there is no reason for excluding the silicotic worker from employment with no silica exposure, provided that his condition is an uncomplicated one. Just as certainly he need not be excluded from dusty trades where his silicosis has reached an early stage only after years of exposure, provided future exposure is reduced to the point attainable by practical equipment.

Further proof that the silicotic individual is employable if no complicating infection occurs is furnished by the numerous reports of periodic clinical surveys now being published in increasing numbers. Most of these observers are finding that those who had uncomplicated silicosis in the early days of the examination program are showing no changes even four or five years later. Not only is silicosis in such workers not progressing to any appreciable degree, but the vast majority do not seem to be developing complicating tuberculosis. One such report for foundry workers in Wisconsin was published in last month's American Journal of Public Health by Dr. O. A. Sander of Wisconsin. Among over 4,000 foundry workers who have been examined periodically, the conclusion was reached that most cases of silicosis with tuberculosis are reactivations of a previously acquired but walled-off tuberculosis. In that paper, proof is given that a man over fifty years of age with uncomplicated silicosis runs very little risk of ever acquiring a superimposed tuberculosis. Moreover, his working efficiency does not seem to be impaired even though his X-ray film manifests

nodular shadows. He is, practically, as safe a man to employ as others of the same age.

Research laboratory studies are still further confirming these conclusions. Dr. William McCann and his associates at the University of Rochester, New York, have done some admirable work along this line. By actual measurements they are finding no appreciable diminution of lung capacity until the silicotic changes are advanced or associated with considerable tuberculosis of emphysema. In other words, the early stages of uncomplicated silicosis do not seem to cause any significant impairment of lung function. This being true, there remains little doubt but that the person with early silicosis is as employable as are others in the same age group without silicosis.

In the proceedings of the National Silicosis Conference sponsored by the Federal Department of Labor in 1937, it was drawn as a final conclusion that those silicotics who are completely or totally disabled because of silicosis and whose difficulties are further complicated by tuberculosis, should be removed from employment. It was estimated that of the 49,000,000 workers in the United States, only 1,000,000 (2 per cent) are in any way exposed to the hazard of silicosis. Perhaps half of this number, 500,000 (1 per cent of the total) are exposed to a serious hazard. Approximately 110,000 (0.2 of 1 per cent of the total) have silicosis in some degree, but it is likely that the number of workers who suffer any occupational disablement at this time from this disease is about four to five thousand. From a purely statistical point of view, therefore, the problem of silicosis is not as serious or general as some other industrial problems, such as lead poisonings and industrial accidents.

The committee concluded that the percentage of the four to five thousand workers, completely or partially disabled because of silicosis plus tuberculosis, should be removed from employment; that the remainder of the four to five thousand workers who have silicosis and disability in some degree, but no tuberculosis, should, in the majority of cases, continue at work. The comment is made that every study conducted thus far confirms the fact that the great majority of these men will not necessarily progress from bad to worse and that these men should be continued at their old work under proper dust control methods. Obviously, all workers should guard against exposure to tuberculosis and those with dust in their lungs should be especially careful in this regard. That is true of both the man who has been exposed for a brief period of time and of the worker who has been subjected to long exposure.

#### Consideration in Placement

In the placement of employees, special consideration should be given to control of the dust to which they are exposed. No employee should be required to work on a job where the dust cannot be controlled. Almost without exception dust con-

control devices and methods are available for practically every operation. It scarcely seems necessary to mention that no one, no matter how good his lungs, should be exposed to excessive quantities of silica dust without some type of respiratory protection. This extra caution is particularly advisable when placing the men who already have some silicotic fibrosis.

#### Interpretation of Lung Changes

The question of uniformity of interpretation of lung changes warrants discussion because of the many physicians in our industrial communities who now are making pre-employment and periodic examinations. In general, it may be stated that the less experience a physician has had with this problem, the more rigid will be his weeding-out. He will reject many applicants for employment whom others with more experience in this field will pass without hesitation. A situation thus is created whereby the applicant's chance of securing his job depends on the experience of the doctor to whom he is sent.

A uniformity of interpretation seems necessary among doctors making these examinations. The natural fear of unjust discrimination among employees required to take medical examinations must also be allayed. Therefore, the Wisconsin Industrial Commission has taken steps to bring about standard practice and procedure with respect to medical examinations and the use of medical reports, by the appointment of a committee of physicians who are acquainted with the problem. We are hoping that the recommendations agreed upon will have a far-reaching effect in standardizing examination procedure in the dusty trades. That they will discourage the rejection of the person with uncomplicated silicosis we are certain.

Wisconsin's experience has taught that silicosis is by no means the serious problem which many persons believe it to be. States which have not adopted coverage for occupational disease should set their fears at rest with the realization that if the problem is approached with the exercise of common sense and careful study and that if men are kept at work and examined periodically for complications, the cost will not be out of line with that of the cost of accidental injury, nor the problem one of undue difficulty.

#### Employers' Responsibility

To those employers who are unwilling to assume any burden of occupational disease, I have nothing to say. Their position runs contrary to the general acceptance of workmen's compensation principles. They are willing to expose their worker, but are not willing to pay the result of exposure. Compensation principles have become so well established that their soundness is hardly debatable at this time. To those employers who are willing to assume a reasonable cost of the result of occupational disease as they do of accidental injury, who are willing to clean up their establishments, and to install dust removing equipment and methods, I say, hire and continue in employment the silicotic as you hire any other employee with a slight physical defect. Examine him to see whether he is afflicted with tuberculosis. Unless complication is found on examination, the employee will probably cost you no more in compensation than if you discharge a large number of employees because of trivial lung findings. Add the cost of turnover, training and morale of the worker and if the ledger does not wholly balance the cost which can be charged to the exercise of a sound humanitarian principle, that cost will, indeed, be small. We can be certain that workers will rightly demand protection for their fellows who are exposed to the silica hazard and compensation for those who become disabled because of it. The trend for decent protection of employees and for compensation for industrial workers undoubtedly will progress to embrace all physical conditions resulting from accident or disease caused by industrial hazard. We are faced with a condition and not with a theory. The employer who early realizes that the cost must be assumed will recognize the economy of proceeding along rational lines. He will profit by careful study and intelligent handling of a problem which is, by no means, insurmountable, and in which most of the pioneering work has already been done. When he realizes the fact that the silicotic is employable in the vast majority of cases, he will keep such workers employed under proper supervision and conditions. The continued employment of such workers together with the control of silica concentration will cause the ghost of silicosis to disappear into thin air as it already has to a good degree in Wisconsin.

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#### *New and Revised American Standards Available*

THE American Society of Mechanical Engineers, 29 W. 39th St., New York, N. Y., has announced that revised American Standards for "Cast Iron Pipe Flanges and Flanged Fittings, Class 125" and "Steel Pipe Flanges and Flanged Fit-

tings" are now available. Important changes and additions have been made to satisfy the needs and practice of industry and to keep the safety factors on a more conservative basis.

A new standard on "Face-to-

Face Dimensions of Ferrous Flanged and Welding End Valves" is also available. This standard covers wedge gate valves, double disk gate valves, globe and angle valves and swing check valves.

# Public Relations and Apprenticeship

By Victor J. Hydar,\* Milwaukee Wis.

THE employer, either large or small, who is not civic minded, who does not take some pride in the progress of his community, is a rare person, indeed. Most employers give generously of their time and money to the local charities, to civic developments and improvements. They are careful of the appearance of their plants and spend sums of money on lawns and landscaping about their office buildings. They employ efficient and courteous, indeed, attractive receptionists who are their original contact people with those of the general public who call on them. They are careful of their publicity.

Why? We all know the answers. First, this intangible but highly commendable quality called civic pride with which is mixed, of course, a measure of personal pride. Second, it's good business. Good business from the standpoint of the customer who comes into the plant and the salesman who calls on the purchasing department in the course of his regular duties. Good business, also, from the standpoint of the employer's reputation in the community.

The management knows that the success of the business depends largely upon its personnel. If the reputation in the community is good, the personnel is stable and satisfied, and is, probably, representative of the best of skilled and semi-skilled help which the community can offer. The management knows, also, that it is a big factor in the social life of the town. It knows that as long as it is able to operate its shops, its men and their families can feed and clothe and house themselves and enjoy some of the privileges of American citizenship; and that when it must close its doors, disaster will strike in many homes.

To safeguard these things, progressive managements have instituted good industrial relations as well as good public relations programs.

## Apprenticeship Is a Factor

Now, where does apprenticeship fit in the picture? As a factor in an industrial relations program, as a maker of better workers and better citizens its value has been discussed for these many years and is generally recognized. But, the employer who is spending money on public good will and does not have apprentices in his plant is missing a good bet which will cost him nothing.

Apprenticeship has, generally speaking, two sides to its nature. It is a business proposition, and a very good one; and it has broad social implications. I speak now of genuine apprenticeship which gives the man a broad skill in a trade and

not merely a specialty or occupation, and I believe that taking proper care of the business side of such apprenticeship permits the social side to take care of itself automatically.

## The Social Side of Apprenticeship

When you take a boy, young and somewhat bewildered, and train him properly in the foundry or machine shop or pattern shop (and don't forget the maintenance department) of your plant so that he can be moved about as business conditions demand it, you have made for yourself a valuable man. When a fluctuation in orders, either upward or downward, requires that you move a man from this job to that, he is the answer to your problem and he will be more steadily employed than the untrained or half-trained worker.

When necessity demands that he go elsewhere for work or that you employ new people, the fully trained man, the product of good apprenticeship, will find his new berth more readily. In these ways, you have improved the social status of the man in question.

## Using the Grapevine

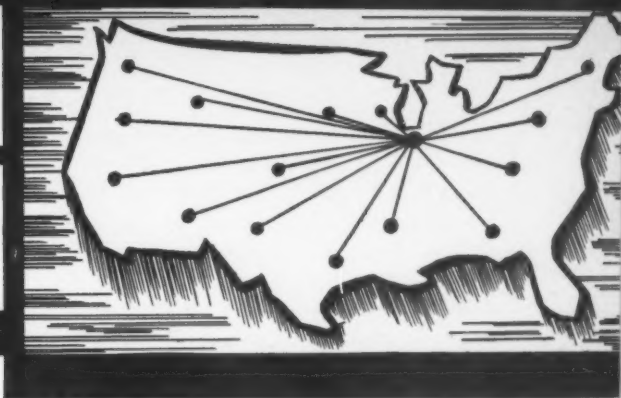
But, you say, how about you? Where does this fit in the public relations picture? The boy whom you take in on an apprenticeship probably has both a mother and a father living who are very much interested in his progress. The mother, over the back fence, or the father, over his lunch box, will say—"Mr. So-and-so of the A.B.C. Company must be a fine man. He certainly is interested in young people. Why, he took in my boy after he finished school and is making a first class machinist of him. (They will probably say master mechanic.) Why, Billy was as green as the grass and didn't mean anything to the A.B.C. Company, but they've given him a chance to be somebody. Some day that kid will have a good job and be earning big wages just because of them. I wish I'd had a chance like that when I was his age."

And so it will go. The grapevine is as good as ever and the people will play up the good that their boys are getting out of your generosity, not thinking much of the business angle of it that you must keep in mind. In my industrial connection I often had people say of the employer I represented—"Mr. Blank surely must be a public spirited man. Gee, the good he's doing those kids on apprenticeship in his shop is certainly a fine thing." And the result? Never at any time was there a dearth of applicants—good ones—to learn the machinist trade or patternmaking or any one of the four or five others—yes, even the foundry.

AMERICAN FOUNDRYMAN

\*Chairman, A.F.A. Committee on Apprenticeship.

# Chapter Activities



## Ontario Chapter Closes Successful Season

By G. L. White\*, Toronto, Ont.

THE last meeting of the Ontario Chapter for the season was held April 28 at the Carls-Rite Hotel, Toronto, with Chairman Joseph Sully, Sully Brass Foundry, Ltd., presiding. The officers of the Chapter for the coming year were formally elected. The new Chairman, D. J. Macdonald, Dominion Radiator and Boiler Co., Ltd., paid tribute to the work of Mr. Sully in the development of the Ontario Chapter, and voiced the hope that the Chapter would show steady progress in its second year. The Officers for 1939-1940 are:

**Chairman**—D. J. Macdonald, Dominion Radiator and Boiler Co., Toronto.

**Vice Chairman**—D. M. Storie, Fittings, Ltd., Oshawa.

**Secretary - Treasurer**—S. R. Francis, Metals and Alloys, Ltd., Toronto.

**Directors**—J. Sully, Sully Brass Works, Toronto; O. W. Ellis, Ontario Research Foundation, Toronto; W. R. Barnes, W. R. Barnes and Co., Hamilton; N. B. Clarke, Steel Co. of Canada, Ltd., Hamilton; C. C. MacDonald, Frederic B. Stevens of Canada, Toronto; J. J. McFadyen, Galt Malleable Iron Co., Ltd., Galt; John Thwaites, Beatty Bros., Ltd., Fergus; T. G. Beaumont, Fahlralloy Canada, Ltd., Orillia; John Reid, Canadian Westinghouse Co., Ltd., Hamilton.

Some fundamental principles in the production and application of alloy cast irons in the foundry were discussed by R. G. McElwee, foundry engineer, Vanadium Corporation of America.

The metallurgy of alloy cast

irons is complicated by the two forms of carbon present and by the two fold effect that most elements have upon properties. The direct effect of silicon is hardening but through the reduction of combined carbon it also exerts a softening influence. Chromium is generally recognized as a carbide former and hardener; and while this is its preponderant function, its deoxidizing action is of increasing importance.

It is important to remember that the carbon and silicon in the iron should be adjusted to get about the strength required, and that the alloy addition should serve to make the iron easier to run and machine, and less liable to deviation in properties. Alloys

are not economical for strength in cast iron except in special jobs.

Alloying elements may be divided into two principal groups with two subdivisions in each case. The softeners or graphitizers with deoxidizing properties are silicon, titanium, aluminum, and zirconium. Graphitizers without deoxidizing action include nickel, copper and cobalt. Inert hardeners are molybdenum and tungsten. Those with affinity for oxygen include manganese, vanadium, chromium and boron. Under certain conditions the latter subdivision might be softeners, but this is never true of molybdenum and tungsten.

The real science of making alloy cast irons consists in the proper combination of hardening and softening alloys to secure special results desired.

## St. Louis Chapter Elects New Officers

By J. W. Kelin\*, St. Louis, Mo.

ED. KING, Hill and Griffith Co., Cincinnati, Ohio, was the principal speaker at the May 11 meeting of the St. Louis District Chapter. His subject, "Molding Sands," was very favorably received by the group and the discussion period that followed was very active.

Inasmuch as this particular meeting was designated as the annual business meeting, a complete annual report and financial statement was submitted by the secretary-treasurer. Attention was directed to the membership increase from 90 on May 1, 1938, to 107 on May 1, 1939. Two memberships received during the evening increased that total to 109.

Acting Chairman L. E. Everett, The Key Co., East St. Louis, Ill., then asked for the report of the membership committee which

was submitted by R. Stifel, Hickman Williams & Co. Two new members were presented, Clee Shy, Banner Iron Works, and Walter A. Zeis, Midwest Foundry Supply Co., Edwardsville, Ill.

C. R. Culling, Carondelet Foundry Co., gave report on the Apprentice Training Committee, outlining results of the molding and pattern making contests that had been held several weeks previously. Entertainment Committee Chairman R. K. Durkan, M. W. Warren Coke Co., directed special attention to the picnic on June 10 to be held at Joe Davies' Country Club.

A proposed constitutional amendment increasing the Board of Directors from 6 to 12 was

\*Federated Metals Div., American Smelting & Refining Co., Secretary-Treasurer, St. Louis District Chapter.

\*Canadian Metals and Metallurgical Industries, Official Reporter, Ontario Chapter.

then passed unanimously by the Chapter. L. J. Desparois, Pickands Mather & Co., Chairman of the Nominating Committee, submitted a proposed list of Officers for the coming year. The Nominating Committee report was accepted, and the following Officers and Directors were elected:

**Chairman**—L. E. Everett, Key Co., East St. Louis, Ill.

**Vice Chairman**—W. Carter Bliss, Scullin Steel Co., St. Louis, Mo.

**Sec'y-Treas.** — J. W. Kelin, Federated Metals Div., American Smelting and Refining Co.

**Directors for Three-Year Term**  
C. H. Morken, Carondelet Foundry Co., St. Louis, Mo.

L. C. Farquhar, American Steel Foundries, Granite City, Ill.

A. O. Nilles, Griffin Wheel Co., No. Kansas City, Mo.

Webb Kammerer, Midvale Mining & Mfg. Co., St. Louis, Mo.

**Directors for Two-Year Term**

L. J. Filstead, John C. Kuperle Foundry Co., St. Louis, Mo.

R. K. Durkan, M. W. Warren Coke Co., St. Louis, Mo.

**Directors for One-Year Term**

H. Sanders, American Foundry & Mfg. Co., St. Louis, Mo.

C. E. Rothweiler, Hickman-Williams & Co., St. Louis, Mo.

#### Kansas City Extension Meeting

Ninety foundrymen and friends from Missouri, Kansas and Oklahoma were present at the Second Annual Extension Meeting held under the auspices of the St. Louis District Chapter at the President Hotel, Kansas City, Mo., Friday evening, April 21.

Approximately twenty went to Kansas City from St. Louis, a distance of approximately 300 miles, to participate in this movement to stimulate interest in the American Foundrymen's Association and its various activities.

During the course of the evening the meeting was under the chairmanship of A. O. Nilles, Griffin Wheel Co., Kansas City. L. E. Everett, acting chairman of the St. Louis Chapter, extended an invitation to those present to join the A. F. A. directing special attention to the

many advantages offered through membership in the organization.

Special emphasis was placed on the fraternal interest felt by the St. Louis Chapter toward the Kansas City foundrymen. A cordial invitation was given to participate in the picnic of the St. Louis Chapter which will be held June 10 and in its other activities.

The speaker of the evening

## Coast Chapters Hold Joint Conference at Fresno

By G. L. Kennard\*, San Francisco, Calif.

THE Annual Joint Conference of the Northern and Southern California Chapters was held in Fresno, Calif., April 22 at the Fresno Hotel. M. G. Wilson, Wilson & Nutwell, Fresno, acted as presiding officer at the conference and C. B. Tibbetts, Los Angeles Steel Casting Co., Los Angeles, as toastmaster.

Following an address of welcome by Mr. Wilson, the meeting was turned over to Mr. Tibbetts who introduced Albert M. Paul, manager, California Products Co., who spoke on "Observations of Industrial Trends." Following Mr. Paul, P. F. Keen, secretary, Pacific Coast Chapter, Institute of Scrap Iron & Steel, spoke at length on the question of exportation of scrap iron and

was C. R. Culling, Carondelet Foundry Co., St. Louis. The subject of his talk was "General Foundry Practice in a Specialty Jobbing Foundry." The talk was very excellently received and the stereopticon slides displayed by Mr. Culling were of decided interest to the group. Following the talk a Round Table discussion of about an hour's duration was held.

steel, quoting from records supplied by U. S. government officials. The final speaker was Judge S. J. McAtee, San Francisco, who gave a thorough and encouraging report on the work done with reference to tax reduction on coke.

A feature of the meeting was an inspection trip through the Twining Laboratories, Fresno, under the direction of Dr. F. E. Twining, who had acted as local chairman for the meeting.

The next joint meeting of the two chapters is scheduled for April, 1940. A plan also is under way for a two-day conference at Fresno State College, for which committees soon will be appointed.

\*Pacific Coast Founders Association, Secretary, Northern California Chapter.

## Arbogast to Head Michiana Chapter

By L. L. Andrus\*, Mishawaka, Ind.

MEMBERS of Michiana Chapter turned out in large numbers for the final lecture meeting of the year, on April 25 at the Hotel Oliver, South Bend. 125 Members attended the dinner and the attendance had swelled to 160 at the time L. P. Robinson, Werner G. Smith Co., Cleveland, began his talk on core room troubles. Mr. Robinson's talk covered proper selection of core sands and binders, use of cereal binders, proper ratios, correct mixing, moisture control, baking, venting, and inspection. The practical discussion on these points were interlaced with a se-

ries of comedy illustrations that sent the members away with a recollection of a wonderful evening of entertainment as well as a highly informative discussion. The question and answer session was particularly enjoyed by a large number of core room workers who attended the meeting.

The April meeting being the final business session of the 1938-39 season, the Chapter elected its officers and directors for next year. The Chapter had unanimously desired to have M. J. Lefler, Western Foundry Co., Chicago, continue as chairman

\*American Foundry Equipment Co., Secretary, Michiana Chapter.

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of the group for next year, but due to his having changed business connections and now being located in Chicago, his resignation was accepted with considerable reluctance. The Chapter gave a rising vote of appreciation to Mr. Leffer for his services in having helped to establish the Chapter and guide its first meetings.

In selecting the officers for next year, the Chapter elected A. C. Arbogast, vice president, Northern Indiana Brass Company, Elkhart, Ind., as chairman; M. F. Doty, manager castings division, Clark Equipment Co., Buchanan, Mich., as vice chairman, and elected to continue L. L. Andrus, sales manager, American Foundry Equipment Company, Mishawaka, Ind., as secretary-treasurer of the organization. The Chapter also elected two new directors: Edward Bumke, Oliver Farm Equipment Co., South Bend, and Al Frees, Peru Foundry Co., Peru. Other

directors were continued in office for the next season.

The officers commented on the fact that the members had shown a remarkably fine attendance during the first season's meetings and in every way participated in the program of the Chapter to an extent beyond original expectations. With this evidence of the need and desire for an active Chapter in the area served, the directors look forward to a highly successful season starting in the fall.

W. A. Bachman, New York Central R. R. Co., Elkhart, Ind., chairman of the entertainment committee, asked for a record vote on the question of holding a picnic outing during June, and the idea was so well received that plans were made to hold this party at some nearby lake resort where golf, swimming and other sports are available. Definite information and invitations will be forwarded several weeks before the date for the outing.

## *Metropolitan N. Y.-N. J. Chapter Holds Annual Meeting*

By T. J. Wood\*, Mahwah, N. J.

THE Metropolitan New York-New Jersey Chapter held its April 17 meeting in the Essex House, Newark, N. J., in conjunction with the Newark Chapter of the American Society for Metals. G. M. Rollason, Aluminum Co. of America, Garwood, N. J., chairman of the Newark A. S. M. Chapter, presided.

R. A. Gezelius, metallurgist, Taylor-Wharton Iron & Steel Co., High Bridge, N. J., addressed the meeting on "Steel Castings." The speaker stressed the importance of design as related to solidification, contraction and various defects. He also discussed modern heat-treating methods, alloy applications, advantages of cast steel construction, and the relation between the foundry and the welding shop.

The May 8 meeting of the Chapter, held in the same place, with Chapter Chairman D. J.

\*American Brake Shoe & Foundry Co., Secretary, Metropolitan New York-New Jersey Chapter.

Reese, International Nickel Co., Inc., New York, presiding, was the annual meeting. The following new officers were elected for the 1939-40 season:

*Chairman*—W. E. Day, Jr., Mack Mfg. Co., New Brunswick, N. J.

*Vice Chairman*—R. J. Allen, Worthington Pump & Machinery Co., Harrison, N. J.

*Secretary*—W. A. Phair, *The Iron Age*, New York.

## *Unusual Uses of Castings Discussed Before Chicago Chapter*

By L. L. Henkel,\* Chicago, Illinois

THE Chicago Chapter of the A.F.A. held its regular monthly dinner meeting on May 8, 1939, at the Medinah Club, Chicago. L. H. Rudesill, Griffin Wheel Co., chapter chairman, presided and introduced E. J. Carmody, C. C. Kawin Co., who spoke on "Unusual Uses of Cast

*Treasurer*—Samuel Frankel, H. Kramer & Co., New York.

*Directors for 2 years*—

George Hockgesang, American Brake Shoe & Foundry Co., Mahwah, N. J.

T. D. Parker, Climax Molybdenum Co., New York.

D. J. Reese, International Nickel Co., Inc., New York.

J. W. Reid, Robbins Conveying Belt Co., Passaic, N. J.

Sam Tour, Lucius Pitkin, Inc., New York.

*Directors for one year*—

R. A. Gezelius, Taylor-Wharton Iron & Steel Co., High Bridge, N. J.

R. E. Nesbitt, Pratt Institute, New York.

J. Nevin, Otis Elevator Co., Yonkers, New York.

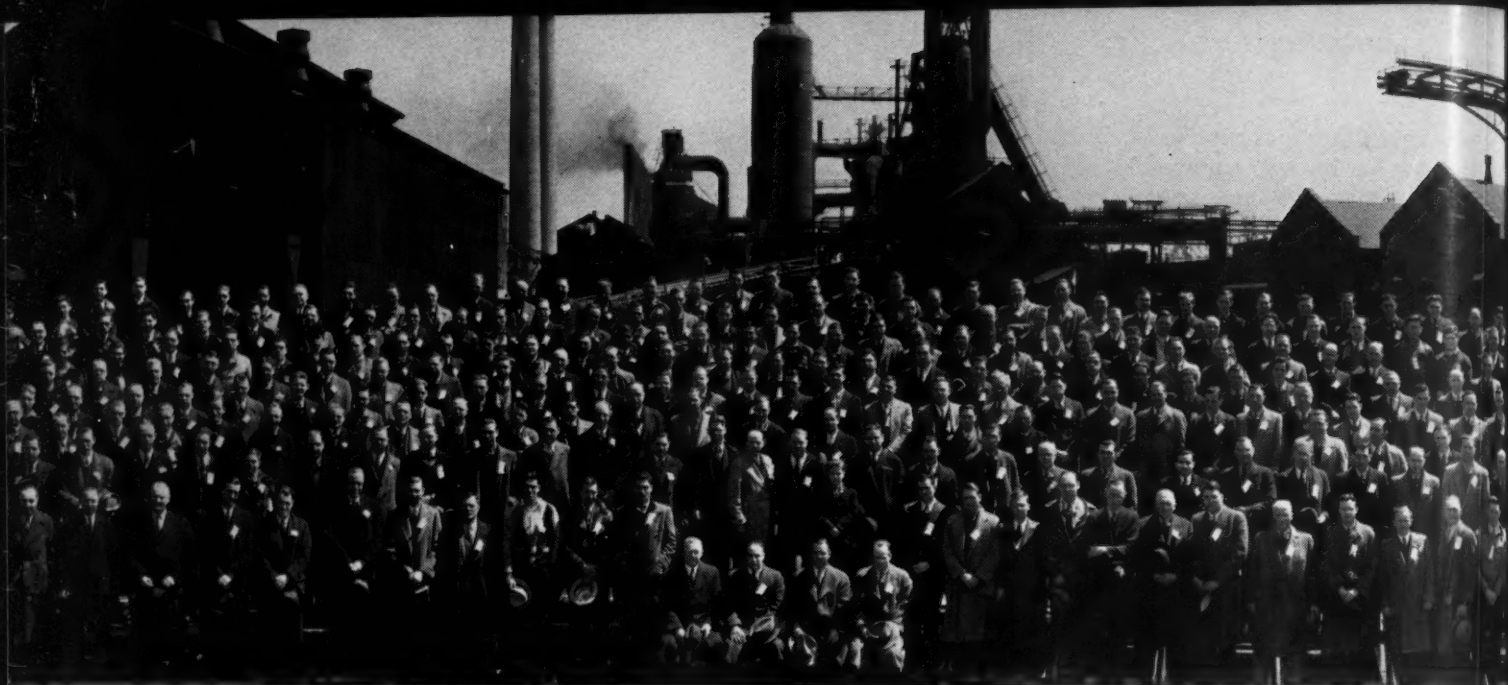
W. G. Reichert, Singer Mfg. Co., Elizabeth, N. J.

T. J. Wood, American Brake Shoe & Foundry Co., Mahwah, N. J.

Following the election, W. A. Phair, *Iron Age*, New York, a director of the Chapter, gave an interesting talk on "Some Recent Developments in Foundry Equipment and Practices." The speaker covered recent cupola innovations such as the Walbro bottom-tap and the double-zone cupolas. A novel method of preheating the blast by reclaiming heat from the slag also was described. Other topics briefly touched upon were pit-type mixing ladles, dust elimination in tumbling barrels, ring-type continuous pouring tables, permanent molds, pressure casting of gray iron, core blowing machines and plaster molds for brass and aluminum castings.

Iron." Mr. Carmody's use of many slides showed very clearly the development of cast iron from the earliest time until the present. Of exceptional interest was the use of permanent molds during the stone age. Chairman

\*Interlake Iron Corp. and Secretary, Chicago Chapter.



Chicago Chapter Lecture Course Group Which Visited Wisconsin Steel Company.  
(Photo, Courtesy Wisconsin Steel Co., Chicago.)

Rudesill next introduced J. H. Lansing, Malleable Founders' Society, who spoke on "Uses of Malleable Castings." Mr. Lansing very ably showed how malleable casting played an important part in every day life and how in producing these castings various difficulties were overcome. The final speaker of the evening, B. J. Aamodt, National Malleable and Steel Castings Co.,

spoke on "Uses of Steel Castings." Mr. Aamodt described many industries in which steel castings were used and illustrated the use of steel castings in ship, railroad, chemical industries, etc. It was Mr. Aamodt's belief that with better understanding of design, engineers were using more and more steel castings in place of other methods of fabrication.

Nominating Committee, read his committee report which nominated the following:

*For Chairman*—R. C. Harrell, Stockham Pipe Fittings Co., Birmingham.

*For Vice Chairman*—W. O. McMahon, Sloss-Sheffield Steel & Iron Co., Birmingham.

*For Secretary-Treasurer*—J. A. Bowers, American Cast Iron Pipe Co., Birmingham.

*For Directors for three years:*  
C. B. Saunders, Tennessee Coal, Iron & R. R. Co.; H. A. Newbury, Newbury Mfg. Co.; A. S. Holberg, Alabama Clay Products Co.

The nominees will be voted upon at the next meeting of the Chapter.

## *Birmingham Chapter Sees Technicolor Film on Steel*

By W. O. McMahon\*, Birmingham, Ala.

THE April 21 meeting of the Birmingham District Chapter was held in the Pine Room, Hotel Tutwiler, Birmingham, Ala., with Chapter Chairman C. B. Saunders, Tennessee Coal, Iron & R. R. Co., presiding. Following the dinner, Chairman Saunders called for a report of the Membership Committee and then presented the program for the evening which consisted of a picture on the manufacture of steel from mines to finished product. The picture was in technicolor and was thoroughly enjoyed by those present.

Following the showing, C. K. Donoho, American Cast Iron Pipe Co., reporting for the chairman of the Program Committee, thanked Mr. Saunders and his company for showing the pic-

ture. T. H. Benners, Jr., T. H. Benners & Co., chairman of the

## *Lecture Course Group Visits Wisconsin Steel*

WISCONSIN Steel Co., Chicago, Ill., played host at its South Chicago plant on April 22 to more than 200 visitors who came under the auspices of the lecture course of the Chicago Chapter, American Foundrymen's Association. The visit was the concluding event of this year's lecture course.

In parties of 15, each with a guide, the visitors inspected the by-product coke ovens, open hearth furnaces, blast furnaces, powerhouse, the 21-inch continuous blooming mill and a merchant bar mill.

Seated, left to right, in the picture are L. B. Robertson, su-

perintendent, Wisconsin Steel Company; J. D. Burlie, Western Electric Co., Chicago, chairman of the Lecture Course Committee; William E. Brewster, assistant superintendent, Wisconsin Steel Company, and G. P. Phillips, International Harvester Co., Chicago, a director of the Chicago Chapter.

## *Book Review*

*Second Report of the Alloy Steels Research Committee*, Special Report No. 24, red paper bound, 390 pages, 262 figures, 79 tables, published by the Iron and Steel Institute, 4, Grosvenor Gardens, London, S. W. 1.

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\*Sloss-Sheffield Steel & Iron Co., Secretary-Treasurer, Birmingham District Chapter.

This report is by a joint committee of the Iron and Steel Institute and the British Iron and Steel Federation to the Iron and Steel Industrial Research Council. The various papers contain reports of research work done on alloy steels by leading metallurgists and physicists of Great Britain and should be of interest to metallurgists and physicists in America who are doing work along similar lines.

The report is divided into 13 sections which contain the following: (1) Introduction, (2) the constitutional diagram of the alloys of iron and nickel, (3) the scaling of steels in sulphur-free and sulphur containing furnace atmospheres, (4) an electron-diffraction study of oxide films on iron, (5) titanium and its effect upon iron and steel, (6)

further researches on the changes in steel below 400°C., (7) the influence of high frequency electric currents on the properties of steel, (8) the influence of the alloying element on the A<sub>3</sub> point in iron-cobalt and other alloys, (9) second report of subcommittee A on thermal treatment, (10) the hair-line crack subcommittee, (11) a scientific study of corrosion-fatigue, (12) the intermediate transformation in alloy steels, (13) the determination of the transformation characteristics of alloy steels.

This report is as well and clearly written as previous reports of the institute. It can be said that this work is a step closer to a better and complete understanding of the various metallurgical problems.

#### Membership and Reception Committee

Robert Frankl, *Chairman*.  
J. Don Judge.  
A. K. Kramer.  
L. Naberhaus.  
A. Kuhn.  
G. Seyler.  
P. H. Cone.  
Mr. Shannon.  
Mr. Radabaugh.

#### Entertainment Committee

R. J. Redmond, *Chairman*.  
Chas. G. Erhart.  
Ed. Hausfeld.  
L. C. Snyder.  
Wm. Beiser.  
L. Gosiger.  
E. Thompson.  
W. Rengering.  
W. Scott.

Chairman Ewig then introduced our guest speaker, Carl H. Morken, superintendent, Carondelet Foundry Co., St. Louis, Mo., who presented a very interesting discourse on their foundry practice, which was illustrated by lantern slides. At the conclusion of his address, all present gave him enthusiastic applause, which was evidence of their appreciation for his address.

\*Reliable Pattern & Castings Co., Secretary, Cincinnati District Chapter.

## Cincinnati Chapter Appoints Standing Committees

By E. T. Korten\*, Cincinnati, Ohio.

THE April 11 meeting of the Cincinnati District Chapter of A. F. A. was held at the Alms Hotel with 58 present for dinner, and 40 more who assembled immediately after for the meeting which followed.

Chairman Herman Ewig, Cincinnati Milling Machine Co., presided and suggested that we open this meeting in memory of our fellow member Mr. Bruce Hill, who passed away on April 5. Mention was made of the splendid work he had done as chairman of the Convention Fund Solicitation, and also his enthusiasm in helping to organize our Chapter. All present arose as Mr. Ewig concluded his remarks and stood for a few moments in respect for the memory of Mr. Hill.

The announcement of standing committees was made as follows:

#### Program Committee

H. G. McFarlin, *Chairman*.  
Joe Schumacher.  
Eric O'Hara.  
H. F. McVay.  
W. M. Ball, Jr.  
Frank Hutchinson.  
Henry M. Wood.  
Walter Wright.  
William Love



Chapter Officers Were Among the 700 Who Attended the Recent Senator Burke Dinner Sponsored by the Wisconsin Chapter. Top, Left—Bill Grede, Ralph MacPherran and Ben Claffey Talk It Over. Top, Right—Bill Donnelley, Bill MacNeil and Art Ziebell Have a Laugh Over Something. Bottom—Past Chairman Roy Jacobs, Senator E. H. Burke and Newly-Elected Chairman MacNeil Discuss a Pleasant Subject.

## Abrasives Engage Interest of Northern California Chapter

By G. L. Kennard,\* San Francisco, Calif.

**J** D. FENSTERMACHER, Columbia Steel Co., San Francisco, Calif., chairman of the Northern California Chapter, presided at the regular monthly meeting of the Chapter held May 12 at the Whitcomb Hotel, San Francisco. Following the dinner, it was announced that the June 9 meeting would be held at Lake Merritt Hotel, Oakland, and as that would end the Chapter's fiscal year, there would be an election of officers. The chairman appointed C. M. Henderson, H. C. Macaulay Foundry Co.; Charles Hoehn, Enterprise

Foundry Co., and John Fowler, Pacific Foundry Co., as the Nominating Committee to present a slate of officers.

The main speaker of the evening was John Donald McCready, Simonds Saw and Steel Co., San Francisco, who spoke on abrasives. Mr. McCready described the problems encountered in the manufacture of abrasive wheels. His story was so interesting, particularly to foundry users of emery wheels, that he was called on to reply to many questions.

\*Secretary-Treasurer, Northern California Chapter.

## Machine Shop Control of Casting Inspection

By J. Morgan Johnson,\* Moline, Ill.

**T**HE regular monthly meeting of the Quad-City Chapter was held May 22 in the Ft. Armstrong Hotel, Rock Island, Ill. Chairman M. J. Gregory, factory manager, foundry division, Caterpillar Tractor Co., Peoria, Ill., presided at the meeting. Following the dinner, reports of the secretary-treasurer, trustees and auditing committee were made and approved. The report of the Nominating Committee, as given in the May issue of *American Foundryman* was again read and the officers unanimously elected.

The annual outing was announced for Saturday, June 17, at Eagles Camp on Rock River.

Chairman Gregory then introduced M. D. Johnson, chief inspector, Caterpillar Tractor Co., Peoria, who spoke on "Machine Shop Control of Inspection of Castings." Mr. Johnson said that good castings for use by customers means safety to all who use the article for the purpose for which it is made. To bring this about, various tests are needed in the control of inspection. Preliminary checks usually consist of visual inspection

first with sounding, chalk, oil, paint, magna-flux, water pressure, locating points and file tests made wherever necessary. He further stated that maintenance of a good inspection force is important and can be secured through proper training by conferences, lectures, tours and printed material furnished on various subjects.

### Book Review

*First Report on Refractories Materials*, Special Report No. 26, red cloth bound, 478 pages, 178 figures, 118 tables, published by the Iron and Steel Institute, 4, Grosvenor Garden, London, S. W. 1.

This report is by the Joint Refractories Research Committee, Iron and Steel Industrial Research Council and The British Refractories Research Association. It is divided into: Section A—Containing the foreword and abstracts of the various papers; Section B—On steelwork refractories containing (1) an introduction to investigations on steelworks refractories, (2) refractories used in the production of steel by the basic open-hearth process, (3) research on

composite chrome refractories, (4) some experiments on chrome-magnesite-dolomite mixtures, (5) some factors influencing the durability of chrome-magnesite bricks in basic open-hearth furnaces, (6) notes on the preparation and properties of some synthetic spinels, (7) the tridymitization of silica bricks, (8) proposed standard nomenclature of various sections of the open-hearth furnaces, (9) progress report of investigations for the open-hearth refractories joint panel; Section C—On blast furnaces refractories containing (10) blast furnace linings, (11) the action of slags on refractory materials, (12) the action of alkalies on refractories materials, (13) jointing cements, (14) the refractoriness under load test and (15) progress report of investigations for the blast furnace refractories panel.

The various papers contain research done by the leading steel and refractories men of Great Britain and should be of interest to open-hearth foundries and refractory people of the United States.

## Battelle Enlarges Research Laboratory

**C**ONTRACTS have been let by Battelle Memorial Institute, Columbus, Ohio, for the construction of a new research laboratory. According to Director C. E. Williams, the structure is to consist of a wing extending from the present building, containing 50,000 square feet of space on five floors and will be ready for use by the first of next year.

## A. F. A. Moves to New Offices

**Y**OUR Association has moved to new offices in the same building in which it has been located for the past several years. The new offices are much better arranged than formerly and have been secured at a considerable reduction in rental.

The new offices of the association are in rooms 1396-1398, at 222 West Adams St., Chicago.

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\*Tri-City Manufacturers Association and Secretary, Quad City Chapter.

## *Junior Foundrymen Inspect Caterpillar Tractor Plant*

ON April 26, the organization at Crane Technical High School, Chicago, which is known as the Junior Foundrymen of America, made an inspection trip to the plant of the Caterpillar Tractor Co., Peoria, Ill.

M. J. Gregory, plant manager, Foundry Division, Caterpillar Tractor Company, invited the boys to be his guests for this visit. Mr. Gregory recently made an address before the Chicago Chapter of the American Foundrymen's Association which inspired the Junior Foundrymen organization with a desire to see the plant.

The trip to Peoria was made by bus, which arrived at Peoria at 10:30 A. M. and the boys—37 in number—were entertained royally by Mr. Gregory and his staff. They visited the machine and assembly shops in the morning, had lunch in the company cafeteria, and then spent the remainder of the day in the foundry. Mr. Gregory had arranged for eight apprentices and graduates of the foundry apprentice class to accompany the boys through the foundry and explain all phases of its operation.

The Junior Foundry organization is sponsored by the Chicago Chapter of the A. F. A. which appointed a committee to co-operate with the boys in arranging programs for their regular monthly meetings. A. W. Gregg, Whiting Corp., Harvey, Ill., chairman of this committee; H. W. Maack, Crane Co., Chicago, and Roy Schroeder, foundry instructor, Crane Technical High School, had charge of the boys on this trip and report that they got a big kick out of the Caterpillar foundry, being especially impressed by the clean, orderly condition of the entire plant and the precautions taken throughout the inspection trip to insure safety and the complete explanation of all matters of interest.

The Caterpillar Tractor Company has been doing an outstanding job of apprentice training, more than 400 apprentices

being employed at the present.

The Junior Foundry boys thoroughly enjoyed the trip and ex-

pressed appreciation for the courtesy and hospitality shown by Mr. Gregory and his organization. Incidentally, the guides reported that the interest shown, and the questions asked by the boys, were of more than ordinary intelligence.

## *Foreman Training Course Instituted*

THE International Correspondence Schools, Scranton, Pa., has instituted a new course in foreman training and has published a series of eight books covering the subject discussed. The new course has been given the title, "Managing Men at Work." The first section is covered in five parts which discuss (1) Leadership and output, (2) the worker and his job, (3) the job of directing work, (4) foremanship and organized labor, and (5) the foreman and costs. The remainder of the subjects covered are time study, motion economy and wage systems and job evaluation.

The first section of the series deals with the objects of industry from the theoretical and the actual standpoint. Next the various complications of management are shown, explaining how they are reflected by the individual, group, executive and financial viewpoints. In the present industrial setup, output is generally restricted instinctively by fatigue which can be shown by the workers curve. After describing the various factors tending to stop output, the authors describe how incentive wage systems, non-financial incentive and proper handling of grievances will counteract the faults.

In part two, the worker is discussed from a humanitarian angle to show the effects of fear.

The principals of directing work are ably described in part three of the series. The executive aims are explained from line and staff methods to workers relations and discipline.

Part four deals with organized labor. Union aims, technique, etc., are described so that the foreman relationship can be of the best. The National Labor

Relations Act must be understood as to the terms, purpose and results it intends to accomplish.

Part five describes the various costs of running a department. Social security is the topic of the day. With unemployment due to seasonal work, incompetence of workers and depressions all tending to increase the importance of this topic, insurance, old age, and unemployment benefits must be understood. Therefore, the executive must understand the cost relationships and have charts and reports to help him in this work.

Part six is devoted to time study. In time study, it is necessary to know how to break down complete operations and then give various observation charts to show how this can be done. A man's performance should be rated on his skill and effort, so various form sheets are given for both human and machine time.

In their book on motion study, the authors show, by process charts, motion and law of motion economy. They give various examples and illustrations to show how the law operates. On the charts are given various symbols which must be of certain color and shape to illustrate the operation.

The subject of wage and job evaluation is the last of the series. This subject deals with the various piece-work ratings with examples of each. The different systems are then diagrammed by curves.

In order that each subject is understood before undertaking another, the authors supply questions and problems by which the progress of the student can be determined.



# Abstracts

**Note:** The following references to articles dealing with the many phases of the foundry industry, have been prepared by the staff of *American Foundryman*, from current technical and trade publications.

When copies of the complete articles are desired, photostat copies may be obtained from the Engineering Societies Library, 29 W. 39th Street, New York, N. Y.

## Alloys

USE. See Steel, Wear and Cast Iron.

## Aluminum Alloys

VARIOUS. See Non-Ferrous.

## Analysis

SPECTROGRAPHIC. "Some Applications of the Spectrograph to the Quantitative Analysis of Ferrous and Non-Ferrous Metals," F. G. Baker, *Iron and Steel Institute*, Preprint 1, May, 1939, pp. 1-35. Experiments which were made to extend the scope of spectro-chemical methods to cover the estimation of many of the constituent of alloy steels show that by employing spark spectrograms and photo-electric methods for their evaluation, it is possible to make quantitative determinations of several elements with an accuracy closely approaching that obtainable by chemical analysis. Standard tables and graphs which are used for the evaluation of spectrograms and the range of steels to which they are applicable are shown. The technique adapted is fully described, and the effects of variations from the conditions which have been standardized is given. The latter covers variation in time of exposure, period and temperature of development, use of old developer, the physical condition of the sample and shape of the electrodes. The effects of heterogeneity in the sample under examination and steps being taken to obtain reliable results for average compositions are described. It also is shown how spectrographic methods can be conveniently applied to the analysis of segregates.

Examples are given to show the large saving in time affected by the use of spectrographic methods for analysis of certain materials. (A.)

## Annealing

MALLEABLE. See Malleable Iron.

## Bronze

MELTING. See Non-Ferrous.

## Castings

CENTRIFUGAL. "Centrifugal Castings," A. R. Parkes, *Foundry Trade Journal*, vol. 60, no. 1182, April 13, 1939, pp. 310, 318. Short and very practical paper read before the East Anglian Section of the Institute

of British Foundrymen. With centrifugal or spun iron castings coming more and more into use, very few foundrymen know exactly how they are made. The author explains this very clearly in this paper. First, he describes the theory of the process and then how it is applied in spun-iron pipe castings, cylinder-liners and piston ring manufacture. Next the quality of the castings and some physical properties is explained. Also the mold material with a diagram of a layout of a centrifugal casting machine is detailed. (C.)

CLEANING. "Casing and Water Pit Trap Tumbler Dust," *The Iron Age*, vol. 143, no. 20, May 18, 1939, p. 77. A description of how dust was suppressed in one of the modern foundries. Each pair of tumblers was completely encased in a dust tight metal casing. In addition to this casing, the barrels are set over a pit in which several inches of water are kept. As a result of these dust suppression measures, the atmosphere of the cleaning room is dustless under all conditions. (C.)

CLEANING. "Iron and Steel Descaled and Structural Steel Cleaned and Dehydrated by Oxy-Acetylene Process," J. G. Magrath, *The Iron Age*, vol. 143, no. 16, April 20, 1939, pp. 34-39. Recent developments in flame descaling, in which scale deposits are removed by rapidly heating them with a multi-flame oxy-acetylene tip are outlined. In this process, which is applicable to rolled steel, forgings and castings, the scale is cracked off as a result of the differential expansion between the scale and the base metal. This section of the article includes data on the formation of the various types of scale encountered. In flame cleaning and dehydration discussed in the concluding part of the article, a high temperature multi-flame tip is employed to drive out occluded moisture within and beneath the surface scale of structural shapes and plates. The purpose is to assure an ideal surface for painting. (C.)

ENGINEERING. "Manufacture of Very Light Engineering Castings," A. Burgess, *Foundry Trade Journal*, vol. 60, no. 1182, April 13, 1939, pp. 306-309. Little work has been published about the relation of the size of the vent and the amount of surface area of a core covered with molten metal in a given time. Such data would assist in the production of good castings at the first attempt instead of the foundry having to prove the core had insufficient vents by making a bad casting. The important points to be considered in such a project, with a standard sand mixture and even ramming would be as follows: (1) Volume of sand in core which absorbs the gases generated between its grains; (2) surface area of core covered by metal; (3) time taken to cover core with molten metal; (4) size of vents; (5) position of vents. With these points in mind, the author shows how various castings could have been made with less trouble if a great deal of work had been done along this line. (C.)

PRACTICE. "Foundry and Cupola Practice—Debunked," L. G. Robinson, *Pig Iron Rough Notes*, Spring, 1939, pp. 17-21. This is the first of a series of articles on this subject. In the majority of the smaller foundries, the melting procedures and selection of melting material are very haphazard. This results in either poor or cold iron. Also, the waste of fuel and labor runs quite high. The author attacks these problems first and describes by example and chart how this can be overcome. A very practical article. (C.)

## Cast Iron

COPPER. "Copper in Gray Cast Iron," F. E. Fisher, *Pig Iron Rough Notes*, Spring, 1939, pp. 27-32. This is the second of a series of articles on this subject. Tests were made on cupola iron made of a mixture of 100 per cent malleable grade pig iron with ladle additions of copper. These tests were made to determine the influence of copper on hardness and tensile strengths only, the transverse and deflection values were of no particular interest in this instance. The iron was melted in a 24-in. cupola under generally accepted conditions. Micrographs are given with the chemical analysis, tensile strength, and Brinell hardness. The group was arranged in the order of increasing copper. (C.I.)

GATING. "Gating and Feeding Castings," W. O. McMahon, *Pig Iron Rough Notes*, Spring, 1939, pp. 39-42. This article is on a subject which is receiving more and more publicity as foundrymen meet. The methods of gating and risering used in the industry are many and varied. However, to produce good, sound castings, certain fundamental principles must be followed. The author states a few of these fundamentals and shows by diagram a practical method of gating and feeding. (C.)

OIL-ENGINE. "Production of Oil-Engine Castings," R. C. Shepherd, *Foundry Trade Journal*, vol. 60, no. 1184, April 27, 1939, pp. 347-349. This paper, which was presented to the Nottingham branch of the Institute of Production Engineers, relates foundry practice to production problems. The author discusses foundry raw materials and their control in detail. These subjects are discussed under foundry sands, sand control, mold facings, furnace refractories, pattern shops, melting departments, sand preparing departments, molding shops and casting inspection. (C.)

ENGINEERING PROPERTIES. "Engineering Properties of Gray Iron Improve," V. H. Schnee and C. H. Lorig, *The Foundry*, vol. 67, no. 5, May, 1939, pp. 40-42, 86, 89. This article is a survey of the work on cast iron. A number of diagrams and tables are given illustrating various chemical and physical properties. Also a selected bibliography of literature on cast iron is included. (C.I.)

GRAY IRON. "Gray Irons vs. Gray Iron," V. H. Schnee, *The Iron Age*, vol.

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143, no. 16, April 20, 1939, pp. 19-23-48. The Gray Iron Founders' Society, in an effort to promote better understanding of the mutual problems of the producers and purchasers of gray iron castings, recently has completed a compilation of the engineering properties of gray cast irons as given in the technical literature. The critical bibliography on which this compilation is based was assembled at Battelle Memorial Institute. So much of this information is of interest to the engineer as well as to the foundryman that the Gray Iron Founders' Society has given permission for publication of part of this work. The various subjects described are yield strength in tension, modulus of elasticity in tension, Brinell hardness, compressive strength, transverse strength, modulus of rupture, toughness, impact, impact drop tests, endurance limit, notch sensitivity, damping capacity, shear strength, torsional strength, effect of temperature, growth, welding, machinability, wear resistance, corrosion resistance, size sensitivity and graduations in properties. (C.I.)

PHOSPHOROUS "Phosphorous in Pig and Cast Iron," J. G. Pearce, *Pig Iron Rough Notes*, Spring, 1939, pp. 5-9. The second part of this article. The author continues his discussion on the advantages and disadvantages of phosphorous in iron. Phosphide network, fluidity and castability, and soundness are the subjects discussed in detail. It is stated from a quotation of West's that with 0.85 per cent phosphorous the contraction was 0.0331 and dropped to 0.029 at 1.43 per cent phosphorous. (C.I.)

POROSITY. "Porosity and Sinking in Cast Iron," W. West and C. C. Hodgson, *Foundry Trade Journal*, vol. 60, no. 1183, April 20, 1939, pp. 329 to 333; and vol. 60, no. 1184, April 27, 1939, pp. 344-346. This paper was read before the Lancashire Branch of the Institute of British Foundrymen. The authors, experimenting on iron for porosity and sinking, following the B.C.I.R.A. process of treating molten cast iron containing about 0.2 per cent titanium with carbon dioxide for a short period. The alloy used for making the titanium additions was "ferro-silicon titanium" containing 20 per cent titanium and 14 per cent silicon.

The investigation was started for the purpose of explaining the occurrence of "external sinking" or shrinkage in cupola-melted gray iron castings containing about 3½ per cent carbon when certain brands of pig iron were used. This trouble was found to be overcome when a change was made to a pig iron of high titanium content. Some experiments were then carried out with titanium additions in crucible melts.

The process of adding titanium to cast iron and then treating CO<sub>2</sub> gas, which was developed in England, and patented, for causing the graphite to form in very fine particles, is described, and the advantages of this treatment are enumerated as follows: (1) Improvement in strength of high carbon irons, as for example, from 16,800 to 43,600 pounds per square inch. (2) Improvement in density and soundness. (3) Uniformity in fine structure or "close grain" in both thin sections and sections as thick as 6 in. (4) Greater fluidity or "life" in the molten iron.

The fine structure produced by this process is more easily attained with the exclusion of all coarse graphite in crucible melts than in iron tapped from a cupola, though it is claimed to be possible of ac-

complishment with the latter process if adequate precautions are taken. The quality of the coke used, for instance, is said to make a difference.

A preliminary investigation of a good casting and one showing internal shrinkage as well as the external "sinking" defect, both from the same pattern, indicated that in the former the graphite was finer and the arrangement of the phosphide was such as to produce a distinct network pattern.

Most of the experimental test bars were cast in "oil-sand" cores from crucible-melted iron, and were about ¾ in. in diameters. They were tested transversely on supports 12 in. apart, and tensile tests were made later with specimens machined to 0.564 in. diameter. The addition of the titanium alloy to the iron in crucibles was made by packing the alloy into a welded steel can and plunging this into the melt by means of a steel rod protected with a graphite sleeve. Most of the tests were made in duplicate, and the casting temperatures were measured with a thermocouple protected by a fused silica tube. The results from various comparable melts of titanium and non-titanium irons are tabulated below:

Sample No.	Fe-Si-Ti Added Lb. per 100 Lb.	Pouring Temp. °F.	Chemical Analysis—per cent					Corrected Transverse Strength Lb.	Deflection, Inches	Tensile Strength, Lb. per Sq. In.	
			C	Si	Mn	S	P				Ti
1-2	0	2590	3.74	2.18	1.09	0.028	0.138	0.07	1097	0.205	25,100
1-4	0	2610	3.74	2.18	1.09	0.028	0.138	0.07	1109	0.175	22,800
3-2	2.56	2610	3.82	2.20	0.98	0.026	0.15	0.38	1587	0.18	34,500
3-3	2.56	2620	3.82	2.24	0.98	0.026	0.15	0.38	1507	0.165	35,400
4-1	0	2590	3.87	2.10	0.94	0.068	0.12	0.07	1080	0.25	21,700
4-2	2.4	2340	3.79	2.14	0.94	0.068	0.12	0.19	1495	0.19	34,600
4-3	2.4*	2390	3.70	2.30	0.94	0.068	0.12	0.42	1485	0.20	33,800
5-1	0	2370	3.92	1.89	0.87	0.035	0.16	0.06	1075	0.14	24,400
5-2	2.56	2410	3.76	2.09	0.87	0.035	0.16	0.33	1482	0.155	32,000
5-3	2.56*	2390	3.72	2.13	0.87	0.035	0.16	0.44	1560	0.145	33,200
2382	0	2440	3.78	1.94	0.97	0.068	0.195	0.08	1106	0.245	25,700
2383	?	2410	3.75	2.06	1.00	0.068	0.190	0.28	1501	0.24	31,800
2441	0	2460	3.75	1.80	0.82	0.072	0.14	0.07	1164	0.17	24,200
2441 G	0	2460	3.75	1.80	0.82	0.072	0.14	0.07	1187	0.18	22,700
2442	?	2480	3.71	1.96	0.82	0.080	0.13	0.35	1590	0.175	34,600
2442 G	?	2480	3.71	1.96	0.82	0.080	0.13	0.35	1680	0.15	37,200

\*These titanium additions were followed by treatment with CO<sub>2</sub> gas.

The note "G" referring to samples 2441 and 2442 means that these bars were poured in green sand, while all the others were poured in "oil sand" cores. Samples 2382 and 2383 contained 0.26 per cent chromium, but the chromium was very low in all the others. Samples 1-2, 1-4, 3-2, 3-3, 5-1, 5-2 and 5-3 were melted and treated in crucibles; the others were melted in a cupola, and transferred to crucibles for treatment.

These results agree very well with those which have been obtained and reported in this country, using an alloy containing about 20 per cent each of titanium and silicon, and making the additions at the cupola spout. It is especially interesting to note that these authors found "no notable improvement by using CO<sub>2</sub> under the conditions of these experiments." Another point of similarity of these results with those obtained here is that the increase in strength was obtained in high-carbon irons, and did not extend to over 40,000 pounds per square inch. The authors in fact admit that "very little improvement has been found when applying the titanium treatment to cast irons which in their normal condition possess good mechanical properties" of the order of 38,000 or more pounds per square inch tensile strength. (C.I.)

PROGRESS. "Thirty Years of Progress in Cast Iron," A. B. Everest, *Foundry Trade Journal*, vol. 60, no. 1185, May 4, 1939, pp. 366-367. The author traces the growth and improvement of cast iron for the past 30 years and described this under

the following headings: Edwardian Conditions, Position of Cast Iron, Early Beginnings of Research, Influence of War Conditions, Post-War Developments, Alloy Cast Irons, Cast Iron To-Day, Modern Classification, The New Basis, Inoculation, Wear Resistance and Present Reaction. This article is of value to anyone tracing the history of cast iron, but is of no practical value. (C.I.)

## Coke

PROPERTIES See Fuel.

## Copper

USE. See Cast Iron and Non-Ferrous.

## Cupola

PRACTICE. See Castings and Furnace.

MACHINE TOOL. "Machine Tool Design Changes Being Accelerated," F. J. Oliver, *The Iron Age*, vol. 143, no. 11, March 16, 1939, pp. 36-44. Increases in size, range and adaptability have been made in nearly all classes of machine tools according to recent announcements of the manufacturers. Wider universality is featured in several machines, including a

precision boring unit that does many other operations besides and a tool room grinder that is capable of any conceivable movement to affect the grinding of intricate tool shapes at one chucking. Speed in change-over is exemplified in new quick change collet pads for automatic bar turning machines. (M. H.)

## Design

PRODUCTION. "The Problem of Economic Foundry Production," E. Ronceray, *Foundry Trade Journal*, vol. 60, no. 1184, April 27, 1939, pp. 350-354, 358. This is a slightly abridged abstract of a paper presented to the Institution of Mechanical Engineers. The use of economic methods of manufacture is not limited to the mass production of components, but can be applied to quite modest establishments. The ways of doing this are various and it is necessary to adopt them carefully to the ends sought, so as to avoid spending a large capital sum for a modest saving of labor. It is necessary to be on guard against a number of mistakes so easily made by the inexperienced. In this paper, therefore, the metallurgical aspect of the subject is put aside and attention given solely to methods of actual production, with a special endeavor to point out to the younger generation the difficulties and pitfalls inherent in foundry organization and mechanization. The subject might range from patterns to the methods of molding. However, the paper confines itself to the present day practical situation of foundry mechanization. (D.)

## Enamel

**CAST IRON.** "Foundry and Enamel Practice as Applied to Cast Iron," G. M. Logan, *Foundry Trade Journal*, vol. 60, no. 1185, May 4, 1939, pp. 368-370. The first part of a paper presented to a joint meeting of the Scottish Section of the Institute of Vitreous Enamellers and the Falkirk Section of the Institute of British Foundrymen. The object of this paper is the elucidation of the main principles involved in the production of porcelain-enamelled castings. In describing these methods of operation, an endeavor is made to give briefly the reason for them and the principles underlying them. At the same time, an effort has been made to avoid as far as possible scientific detail with the object of drawing conclusions of interest and value to the foundryman and enameler. (E.)

## Fuel

**COKE.** "The Influence of Carbonizing Conditions on Coke Properties," H. E. Blyden, W. Noble and H. L. Riley, *The Iron and Steel Institute*, Preprint 3, May, 1939, pp. 1-17. A quantitative study of the effect of the carbonizing conditions upon the properties of coke has been made. The results obtained indicate that relatively small pressures up to approximately 40 lb. per sq. in. applied during carbonization bring about great increases in the strength of cokes prepared from weakly coking coals. Further increases in pressure up to 500 lb. per sq. in. have little or no effect upon the coke strength. The development of coke strength during carbonization has been found to occur in two distinct temperature ranges. In the first, 400-500°C., which coincides with the plastic range, the coke strength is greatly affected by the pressure applied during carbonization. The second temperature range is from 650°C. upwards, when the strength developed depends only on the maximum temperature reached during carbonization and is independent of the pressure applied during carbonization. (Fu.)

## Furnace

**CUPOLA.** "New Cupola for Producing Controlled Carbon Content," M. Olino, *Foundry Trade Journal*, vol. 60, no. 1182, April 13, 1939, pp. 311-313. This article is a slightly abridged translation of a paper given to the Polish International Foundry Congress. The principal theme of this paper is a new method of melting in the cupola, whereby it is possible to produce iron having a carbon content within the limits of 2 to 3.6 per cent. The first part of this paper gives diagrams representing different furnace runs and the operation of normal cupolas; in the second part a review is given of the most recent processes of heating the blast and recovering the heat in the cupola; while in the third part, a new type of hot-blast cupola is dealt with for producing iron of controlled carbon content. (F.)

## Gating

**METHODS.** See Cast Iron.

## Gray Iron

**COPPER.** See Cast Iron.

## Hygiene

**DUST.** "It Floats Thru the Air," J. Schultz, *Safety Engineering*, vol. 77, no. 4, April, 1939, pp. 23-25. The author describes the problems encountered in a bronze foundry and states that since the most modern equipment has been installed

they have had improved production, savings in lighting and increased salvage. No less than improvement in the health and morale of workmen, are the advantages obtained from extensive installation of dust control and dust collecting apparatus. (Hy.)

**FATIGUE.** "Fatigue," R. R. Jones, *Safety Engineering*, vol. 77, no. 4, April, 1939, pp. 11-12. In shop management, the following points are significant in their relation to fatigue and production: (1) Study by graphs of production and its relation to man hours; (2) spoiled output or the percentage of rejection at inspector's station; (3) accidents, especially as to time of day accidents occur; (4) incidents of sickness, especially in incidental absence of a day or two; (5) turnover of employment.

To eliminate fatigue, the author suggests the following factors contribute most: (1) Fatigue in the majority of cases under present-day working conditions is not to be reduced by shortening the working day, i.e., eight hours per day, five days per week; (2) fatigue may be combated by the avoidance of too long uninterrupted periods of work; (3) by abolition of overtime and as well the "before breakfast work"; (4) by introduction of rest periods on company time; (5) by change of posture; (6) by rotation of jobs; (7) by carefully studying the muscular movements of the man at work and instructing him in means of correcting faults; (8) by selection of the worker for the job; (9) by removal of causes of needless resentment, irritation and worry; (10) by stimulating the proper incentive to work; (11) by maintaining a good environment, especially as applied to heat, lighting, ventilation and freedom from needless noises. (Hy.)

**FOUNDRY.** "Dusty Foundries," J. A. Goldberg, *Safety Engineering*, vol. 77, no. 4, April, 1939, pp. 8-10. Dusty trades may be divided into two classes with respect to the characteristics of dust production. (1) Concentrated dust-generating operations predominating with little general dust dispersion; (2) general dust dispersion predominating with few localized sources. The foundry as a whole falls in the second of these two. Dust is produced during all the various steps in the manufacture of castings. The dust concentration associated with these operations is governed by a number of factors, the most important of which are: (1) Specified foundry operations—molding, core-making, etc.; (2) intensity of foundry activity—number of workers and amount of material handled per unit of building area and volume; (3) layout and construction of the foundry; (4) nature of material handled; (5) dust control techniques in force: (a) operating procedure insofar as it affects dust production; (b) ventilation—local and general; (c) use of water or other dust-laying procedures; (d) housekeeping. (Hy.)

## Instruments

**MAINTENANCE.** "Care and Maintenance of Control Instruments," D. T. Anderton, *Foundry Trade Journal*, vol. 60, no. 1178, March 16, 1939, p. 230. The urgent demand for efficiency in industry has led in recent years to a rapid application of scientific instruments to industrial processes. Analysis of the principals and uses of the instruments are essential in order to know whether the part in question is in error. If so, steps should immediately be taken to repair the same. (I.)

## Malleable Iron

**ANNEALING.** "Annealing Malleable Iron," W. F. Ross and H. H. Fairfield, *Canadian Metals and Metallurgical Industries*, vol. 2, no. 4, April, 1939, pp. 79-81, 89. Initiated by a few of the larger producers of malleable castings for the automotive and machine production industry, the trend toward furnace equipment design to decrease annealing time to a minimum has steadily asserted itself. At present, malleablizing cycles of over 55 hours are becoming rare and increasingly costly in relation to the newer methods of production in this highly competitive field. The amount of interest displayed in present-day malleablizing equipment by foundry executives shows conclusively that even the smaller producers are contemplating the possibility of short cycle annealing.

The various headings under which this subject is discussed are: Long annealing cycle, development of short cycles, continuous furnaces, pusher type furnaces and atmosphere control. (M.)

**ANNEALING.** "Fast Malleablizing," W. F. Ross, *Steel*, vol. 104, no. 20, May 15, 1939, pp. 66-69, 75. New furnace equipment permits short malleablizing cycles, produces clean work by means of protective atmospheres, thus greatly increasing output yet retaining all excellent qualities of longer treating cycles. Automatic charging and discharging chambers are described. Photographs are included illustrating various parts described. (M.)

**ANNEALING.** "Short Cycle Annealing of Malleable Iron," *Metals and Alloys*, vol. 10, no. 5, May, 1939, pp. 142-143. A short description of annealing malleable iron. Three different views of equipment used in the short cycle anneal is included. With the use of short cycle anneal, it is claimed that production time can be reduced from 200 hr. to 12 to 50 hr. (M.)

**PEARLITIC.** "Pearlitic Malleable Iron," *The Iron Age*, vol. 143, no. 16, April 20, 1939, pp. 33. A malleable iron, as made by one of the leading malleable foundries, is described. This iron is similar in many ways to that of high manganese steel. It was devised to take heavy punishment and still maintain its size and shape under the high torque loads and stress frequently encountered in the field. (M.)

## Non-Ferrous

**ALUMINUM.** "Non-Ferrous Foundry Practice," J. Laing and R. T. Rolfe, *The Metal Industry (London)*, vol. 54, no. 17, April 28, 1939, pp. 463-467. This article dealing with aluminum alloys is number 23 in this series. In describing these alloys, the author discusses the following subjects: The B.S.I. aircraft material specifications for aluminum casting alloys, zinc-aluminum alloys, 3 L5 alloys, copper-aluminum alloys, heat treatable copper alloys, complex copper-aluminum alloys, Y-alloys, complex high-copper alloys, silicon-aluminum alloys, complex low-silicon alloys, complex high-silicon alloys, magnesium-aluminum alloys and R.R. alloys, ceralumin. The author states that because of the low density of aluminum castings, they are being increasingly employed in general engineering work, particularly in reducing inertia losses. (N.F.)

**ALUMINUM.** "Oxide Films on Aluminum," N. D. Pullen, *The Metal Industry (London)*, vol. 54, no. 11, March 17, 1939, pp. 327-329. This paper was presented before the Electrodepositors' Technical Society. The author discusses some physical properties of oxide films on aluminum produced by anodic oxidation. Flexibility,

composition and structure, hardness and electrical breakdown, and x-ray examination receive attention. (N.F.)

**BRONZE.** "Many Non-Ferrous Alloys Available," N. K. B. Patch, *The Foundry*, vol. 67, no. 5, May, 1939, pp. 47, 94, 97. This is the fifth of a series of articles on non-ferrous alloys. The author discusses a series of copper-tin compositions in which the tin is in all cases 5 per cent or more. In describing these compositions, the following points are discussed in detail: Control of zinc content, use of zinc instead of phosphorus, melting point raised by nickel, reducing tin content, fluidity reduces losses, castings made from scrap, and deoxidizing with phosphorus. (N.F.)

**COPPER-NICKEL.** "Non-Ferrous Foundry Practice," J. Laing and R. T. Rolfe, *The Metal Industry (London)*, vol. 54, no. 14, April 7, 1939, pp. 393-398. This article covering the copper-nickel alloys is no. 22 in this series. The alloys in general use industrially are grouped into those containing 20-30, 40-45, and 60-70 per cent nickel. Typical use of these groups is discussed. Precipitation hardening, cast copper-nickel alloys, monel metal, modifications of monel metal, foundry practice, melting practice, pouring temperature, molding technique and runner gates and risers are described in detail. Various tables listing physical and chemical properties of the various alloys are included. Also a number of drawings illustrating methods of gating and feeding are given. A reference list of papers dealing with these alloys is included. (N.F.)

**NICKEL.** "Nickel in the Non-Ferrous Foundry," F. Hudson, *Foundry Trade Journal*, vol. 60, no. 1180, March 30, 1939, pp. 265, 266. The first of two articles from a paper presented before the London branches of the Institute of Metals and the Institute of British Foundrymen. It is the purpose of this paper to outline foundry practice relative to the more recent advances in Non-Ferrous metallurgy as applied to a typical modern alloy. The alloy selected for this purpose is the latest high duty bronze containing 5 per cent nickel, 5 per cent tin, 2 per cent zinc and the balance copper. Placing of gates, pouring temperature, and gas absorption are some of the subjects discussed. Various drawings and references are included. (N.F.)

## Phosphorus

USE. See Cast Iron.

## Porosity

PREVENTION. See Cast Iron.

## Refractories

**CHARACTERISTICS.** "Characteristics and Make-Up of Refractories," J. F. Hyslop, *Foundry Trade Journal*, vol. 60, no. 1184, April 27, 1939, pp. 341-342. The development of refractories is dependent upon two features which call for careful analysis. In the first place there are the inherent characteristics of the refractory determined by its chemical, mineralogical and physical make-up, and in the second, the conditions imposed on the refractory by the nature of specific services. It is important to know the elements which constitute the strength, or weakness, of any given refractory, and it is also necessary to analyze working conditions thoroughly so that proper weight can be given to the factors which determine the failure of the refractory. The purpose of this article is to consider the first aspect, that is, the more important characteristics of refractories themselves. (R.)

**COMPOSITION.** "Softening and Fusion of Refractories," A. Kufferath and E. R. Thews, *Canadian Metals and Metallurgical Industries*, vol. 2, no. 4, April, 1939, pp. 82-85. This article discusses the principal factors of refractories which are composition of refractory, mechanical pressure, chemical action and porosity. These factors are discussed under the following general sections: Influence of pressure, effect of thermal conductivity, influence of mechanical stress, effect of brick shape, chemical resistance, porosity, fluxes and slags. It is current practice in metallurgical industries to evaluate refractories from purely a refractory point of view. As a rule, refractories for various purposes are specified in accordance with the chemical, physical and thermal requirements of the furnaces in question, and if these materials fall short of expectation, the fault usually is placed on their quality. The composition of the refractory determines the softening and fusion points, as well as the general thermal and chemical resistance of these materials under normal operating conditions; but it is equally true that the actual softening temperatures are influenced by a number of auxiliary factors which, while contributing in principle, frequently overshadow the main characteristics to a surprising degree. (R.)

## Steel

**ALLOY.** "Specific Effect of Alloy Additions in Steelmaking," *Canadian Metals and Metallurgical Industries*, vol. 2, no. 4, April, 1939, pp. 86-88. Report of an address by Dr. A. B. Kinzel before the Ontario Chapter of A.S.M. In the steel-making process, metal is melted, refined and deoxidized, with the elements iron, carbon and oxygen always present under industrial conditions. Alloying elements are added to effect deoxidation and to secure the "S" curves, thus influencing the heat treatment of the alloy. Any change in time affects the process of changing ferrite to austenite and arresting the change of austenite to ferrite. Alloy elements have been listed in a variety of ways, but the classification given in this article is an attempt to place together those that produce similar major effects upon steel. (S.)

**CARBON LININGS.** "Carbon Linings for Blast Furnaces," F. Singer, *Metals and Alloys*, vol. 10, no. 4, April, 1939, pp. 105, 108. The author gives a discussion on the use of carbon linings for blast furnaces as used in Germany and which embraces Russia and Sweden as well. Carbon Brick Manufacture, Properties of Carbon Bricks and Carbon Bricks are the subjects described in detail. A reference list on various articles on this subject is included.

**DESIGN.** "Steel Casting Design Features," *Product Engineering*, vol. 10, no. 5, May, 1939, pp. 206-207. Analysis of design details in steel castings with a study of the various modes of joining sections. The effects of sharp corners and abrupt changes, hot spot and continuous wall, bitt castings, stern post, ell and tee connections in producing castings, are described. Numerous illustrations are given showing both the incorrect and correct methods of design. (S.)

**DEVELOPMENT.** "A New Steel-Making Process," V. C. Faulkner, *Foundry Trade Journal*, vol. 60, no. 1179, March 23, 1939, pp. 248-250. The process of making steel by use of Sesci furnaces is described in general. Plant Details, Lining Preparations, Operating Detail, Fetting the Hearth, The Product and Future is given

in detail. Plant layout and photographs showing various furnace views are given. (S.)

**DURVILLE PROCESS.** "The Application of the Durville Rotatory Process to the Casting of Steel," L. Northcott, *The Iron and Steel Institute*, Preprint 7, May, 1939, pp. 1-8. Small steel ingots have been cast by the Durville rotatory process and their structure and properties compared with those of ingots cast by the normal top-casting method. The principal advantage of the Durville non-turbulent process is the ability to cast at a sufficiently low superheat to ensure that the crystal structure is wholly small and equi-axial, thus reducing segregation and "ingotism." There is also an improvement in the surface quality and mechanical properties as compared with steel cast by ordinary methods. The most likely application of the process will probably be in the casting of the smaller types of ingots or castings of high quality or tool steels, where freedom from segregation or coarse crystal structure is required. (S.)

**REFINING.** "Slag Inclusions and Acid Open-Hearth Refining of High-Carbon Steel," H. Styri, *The Iron and Steel Institute*, Preprint 11, May, 1939, pp. 1-10. An arbitrary scale for slag rating and heat diagrams kept during the melting and refining of acid open-hearth steel at S.K.F., Hofors, Sweden, from the early part of 1927, have been used in statistical analyses to study the possible influence of various operating factors on the resultant slag inclusions in the steel. No obvious correlation was found between any single operating factor up to the point of the final additions of deoxidizers and the observed oxidic slag inclusions. In the case of the rate of carbon elimination towards the end of refining, which might be expected to be of importance according to prevalent theories of the rate of reaction, again no correlation could be found. The rates were controlled by the manipulation of the gas and air mixture, regulation of the draft and additions to the bath. Evidently the rate of carbon elimination is determined by the rate of diffusion of oxygen to the bath and is explained by a high value of the velocity constant for the reaction  $\text{FeO} + \text{C} = \text{Fe} + \text{CO}$ . (S.)

## Titanium

POROSITY PREVENTION. See Cast Iron.

## Wear

**ALLOYS.** "Wear Resisting Alloys," J. E. Hurst, *Foundry Trade Journal*, vol. 60, no. 1183, April 20, 1939, pp. 323-324. This article is from a paper presented before the Midland Metallurgical Societies and is confined to the study of nickel-chromium alloys having chemical compositions lying between the following approximate limits: Total carbon, 2.0 to 4.0 per cent; silicon, 0.25 to 1.5; nickel, 3.0 to 7.0; chromium, 0 to 2.5 per cent. Alloys within that range may be correctly described as high-duty hard-wearing cast irons and the limits of composition cover those alloys which are manufactured and sold under trade names of ni-hard, attritard, BF 954 and others. These alloys have a hard white fracture in all but exceptionally heavy sectioned castings where the fracture may be mottled to gray according to the mass of the casting. The Brinell hardness of the alloys in the white condition lies between the limits of 500 and 700. The metals possess a tensile strength of about 49,000 lb. per sq. in. (W.)

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